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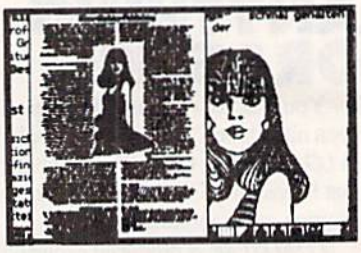

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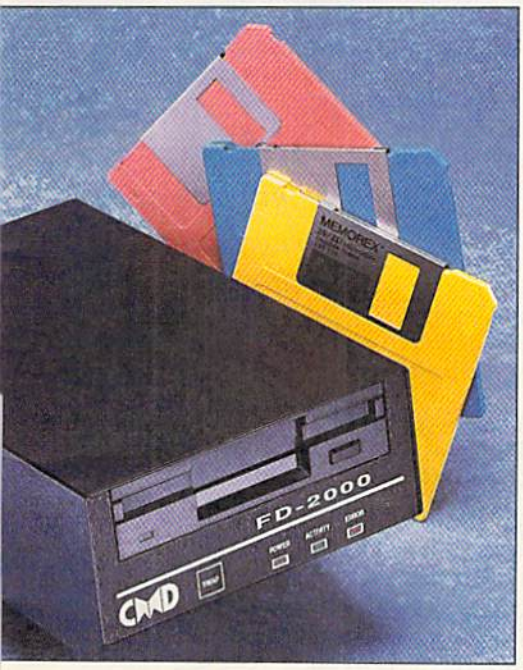


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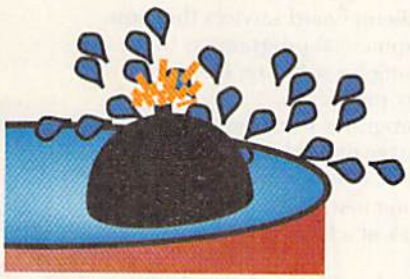

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# RUNning Ruminations

### Who Are *RUN* Readers?

A proud father from Columbus, IN, who credits the computer, in part, for his daughter's good high school grades. A 15-year-old telecommunications enthusiast from Covington, LA, who runs a bulletin board system to chat with chums and exchange information. A 62-year-old small-businessman from Danielson, CT, who uses his computer to make sure that his paving business makes the grade. An elementary school teacher from Titusville, NJ, who employs four C-64 systems to teach computing skills and remedial instruction.

An accurate barometer of a healthy market is the level of user interest and activity. User profiles such as these gleaned from our recent survey unearthed an interesting glimpse into the computing activities of our readers. And they reinforced our conviction that *RUN* readers successfully put their computers to good use, whether managing home finances, introducing youngsters to computing, monitoring amateur radio communications, publishing newsletters, controlling home security or simply writing letters to friends.

*If there's anything we've learned in our years of publishing, it's that there's nothing "typical" about the* RUN *reader.*

◇

Of course, we didn't need to conduct a survey to find that out. It helped, however, bring into focus the changing profile of the *RUN* reader. Consider the following highlights of the survey:

- Most *RUN* readers still use the C-64 (72 percent, as opposed to the 42 percent who use the 128). While many use both systems, the split between 64/128 ownership has remained steady over recent years.
- The peripherals most commonly used are 5 ¼-inch disk drives (94 percent), printers (93 percent) and joysticks (88 percent).
- Half of our readers own a modem, and half use a mouse. RAM expansion units are featured on 28 percent of our readers' systems.
- Online users frequent Q-Link and bulletin board services the most.
- Over three-quarters of readers list commercial programs as their main source of software. And when shopping for software, *RUN* readers are most likely to purchase productivity programs.
- Three-quarters occasionally type in programs from the magazine.
- While there's an influx of new users, over three-quarters of our readers are "veterans," having been in the market for over five years.
- Only 20 percent of *RUN* readers belong to a user's group, though many have expressed frustration at the lack of a local group.
- Over half of *RUN* readers use GEOS.
- Many comments from readers suggest that *RUN* is an invaluable reference source. Readers refer to articles from back issues that are more relevant to them now than when they were first published.
- The primary application? Home management—budgeting, check balancing, finances. Games rated a close second, followed by programming, productivity and business applications.
- Topics of most interest are new products, utilities and applications.
- Our most popular columns: Commodore Clinic (a perennial favorite), News and New Products and Mail RUN.

There you have it. Now you, and we, have a clearer idea of who you are! Thanks to everyone who took time to respond.

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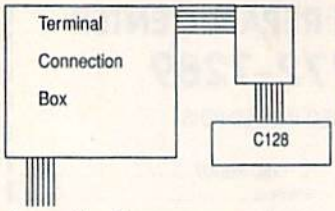


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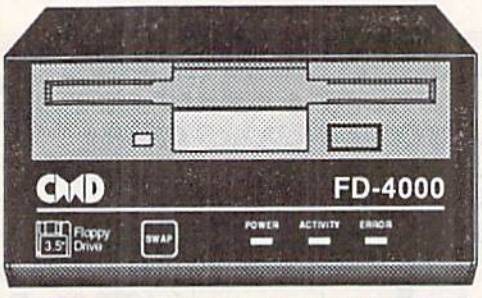


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# CMD FD Series™ Disk Drives

## The Highest Capacity Floppy Available for ANY Computer Platform

While MS-DOS users boast of 2.88 MB, Mac users struggle with 1.44 MB, and AMIGA users are frustrated by a wimpy 880K, Commodore 64/128 users soar to new heights with CMD's new FD Series 3.5" floppy disk drives. CMD's FD-4000 provides an amazing 3.2 MB of storage while its little brother, the FD-2000, offers a 1.6 MB alternative at an attractive price.

Both drives are 1581 compatible and use Double Density (800K) and High Density (1.6 MB) disks while the FD-4000 can also use Enhanced Density (3.2 MB) disks. Imagine, putting up to twenty 1541 disks or four 1581 disks onto a single 3.5" floppy!

FD Series drives are faster, quieter, and more reliable than a 1581 and are just as easy to use as your other drives. Why settle for an outdated 1581 scavenged from the dark corners of a dusty old warehouse, when you can have an FD Series drive helping your C-64/128 to once again set new standards in technology.

- **Fast** - The fastest floppy ever made for the C-64/128. Up to 20% faster than a 1581. Built-in JiffyDOS makes it up to 1200% faster on JiffyDOS-equipped systems
- **Compatible** - Emulate 1541/71/81 drives for greater software compatibility; Use Native Mode with MS-DOS style sub-directories for additional flexibility and power. Perfect for GEOS, BBS, Productivity, CP/M and more
- **Easy-to-use** - FD Utilities create and delete partitions without complicated commands or procedures. Disk and File copiers make it easy to transfer software
- **Special Features** - Set to any device number from 8-15. SWAP button allows instant device 8 or 9 selection
- **Compact** - Smaller than a 1581, with sturdy metal case, wall mount power supply and sleek black paint

### RTC Option

FD Series Drives may be equipped with an optional Real-Time-Clock for time and date stamping of files and automatic setting of the GEOS Clock.

### BCOPY

CMD's all new backup utility allows RAMLink, RAMDrive, HD and FD owners to backup single partitions or entire contents to multiple 1541/71/81 or FD disks.

### KAO® 3.5" DISKS

**High Density**
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|---|---|
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**FD-2000 ~~$239.95~~ $219.95 • FD-4000 ~~$319.95~~ $299.95 • RTC Module $25.00 add'l**

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# perfect print LQ for GEOS

Eliminates jagged output • Laser-like output • GEOCABLE compatible
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**NEW Enhancements: Improved 9 Pin HQ Drivers, Improved output formatting, and Border Font support for geoWrite. New Font collections now available!**

Perfect Print LQ is a complete print enhancement package for GEOS that delivers the highest quality dot matrix output possible. Includes a unique print utility and font set for enhancing GEOWRITE documents, utilities for creating fonts, and high quality drivers for other GEOS applications. Improves text and graphic output on virtually all 9 & 24 pin dot matrix printers and supports font attributes such as italics, outline, underline, bold, etc.

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Shipping/Handling **$5.00** Canada add **$4.50**

Perfect Print LQ operates with most Epson and IBM compatible 9 and 24 pin printers, but does not work with laser, ink jet, bubble jet, RS-232 or strictly Commodore compatible printers. Contact CMD for info on specific models.

# Collette Utilities

NEW

**A Collection of Jim's Best GEOS Programs**

Jim Collette has long been one of the premier programmers in the GEOS community, and with Jim heading off to college this year, we have been given a golden opportunity to offer you this fine collection containing some of his best known work. Includes GEOWIZARD (gateWay compatible), MiniDesk, Font Editor, Font Changer, Select Printer, AddAlbumAuto, DOS Wedge, and Jim's Laser Landscape utilities for postscript laser printers.

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Note: Most utilities on this disk require GEOS v2.0 (64 or 128). Some applications may require 512K RAM expansion.

# gateWay™

The ultimate desktop for GEOS 64/128 V2.0

NEW Version 2.5

Streamlined File Management • Task Switching
Three drive support • Accesses full capacity of CMD Storage Devices, REU's & GEORAM

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**gateWay 64/128 combo $49.95**

Current gateWay User's should contact CMD for upgrade information. CMD recommends a minimum of 512k RAM Expansion for best results

# geoCanvas

**The Alternative Paint Program for GEOS**

While there are a lot of things we could say about this all-new paint program for GEOS, perhaps the features say it best. If you use geoPaint, you NEED geoCanvas!

**Available now for $34.95 plus $5.00 shipping**

**Powerful New Tools & Utilities**

- Draw polygons, connected lines and rays, Ruler display 100ths of an inch, re-definable grid lines, larger font buffer, Pattern and Brush Editor with standard patterns, full window color changer
- ScrapCan allows copying and pasting of large color scraps while PaintCan changes ownership from geoPaint doc's to geoCanvas

**User Interface and Window Controls**

- Open up to three documents at a time, movable tool box, fast updating scroll bars and controls, re-sizable windows, keyboard shortcuts for all menu items, close button on windows, threshold control for better previews, modes for viewing entire screen, file requestor to access fonts and DA's, screen blanking, Menu option to display time and date

geoCanvas operates in 40 column mode and requires GEOS 64 V2.0 or GEOS 128 v2.0, one 5.25" drive and a minimum of 512K RAM expansion.

# JiffyDOS

**Hi-performance ROM upgrade • Performs all disk accesses up to 15 times faster**
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# geoMakeBoot

geoMakeBoot makes booting GEOS from nearly all devices and making back-up copies of the GEOS boot disk easy and convenient. Besides being compatible with virtually all CBM compatible devices including CMD Hard Drives, RAMLink and RAMDrive. Most importantly, geoMakeBoot is simple, inexpensive and easy to use.

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# SwiftLink

Provides an industry-standard IBM style serial port that communicates at speeds from 300-38,400 baud and provides reliable communication using Hayes-compatible RS-232 modems. Plugs into the expansion port and includes terminal programs and software for transferring files to other computers.

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# SID

SID Symphony adds a second complete SID chip to your 64 or 128 and can be attached to your home stereo or amplified speaker systems to povide a whole new dimension in sound. Enjoy hundreds of public domain stereo songs, import MIDI files, or use Compute!s Music System book and SID editor to create original stereo music.

SID Cartridge **$39.95** • Compute's Music Book **$22.95**
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# RAMDrive™

**High-Speed Self-Contained Battery-Backed RAM Cartridge**

- **Compact** - All the features you've ever wanted from RAM expansion in a compact unit. Three capacities: 512K, 1 and 2 megabytes. Dimensions: 6"l x 3"w x 1"h.
- **Portable** - The relatively small size of RAMDrive, coupled with its built-in battery pack make it ideal for porting data from one computer to another.
- **Compatible** - Use RAMDrive with GEOS, CP/M, Q-Link, BBS programs, productivity software and more.
- **Non-Volatile** - External power supply eliminates drain on computer power supply and retains data indefinitely. Internal rechargeable batteries retain data up to 7 days.
- **FAST** - Up to 400x faster than a 1541; 20x faster than RAMDOS; Built-in JiffyDOS speeds access to CMD Hard Drives and JiffyDOS-equipped floppy drives.
- **Easy to Use** - Plugs into the cartridge port. Operates like a standard disk drive. File and disk copiers included along with partitioning, support utilities, and new GEOS configure.
- **RD-DOS** - Organize RAM into as many as 30 manageable partitions that emulate 1541, 1571, & 1581 drives or expand to the full RAM capacity with MS-DOS style subdirectories. Autoboot 64 and 128 mode programs. Configurable as any device number from 8 through 30.

RD-512 **$199.95** RD-1 **$249.95** RD-2 **$299.95**

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HARD DRIVES

**The Ultimate in Mass Storage for the 64/128**

- **Capacity** - 20 Mb to 200 Mb capacities enable you to store the equivalent of up to 1250 1541 (170K) disks.
- **Speed** - The fastest Commodore compatible hard drives. Speeds up to 50x faster than a 1541.
- **Compatibility** - Ideal for use with GEOS, CP/M, Q'Link, BBS programs, productivity software and much more.
- **Compact Size** - 3 1/2" SCSI technology allows for a compact case about the same size as a 1581.
- **Expandability** - Chain up to six SCSI devices or connect to Macintosh, IBM-Compatible & Amiga computers.
- **Built-in Real Time Clock** - Automatically time and date stamps files and sets the GEOS clock.
- **HD-DOS** - Organize storage into as many as 254 partitions that emulate 1541, 1571, & 1581 drives or expand to 16Mb with MS-DOS style subdirectories.
- **Easy to use** - Connects like a standard drive and easy to read manual explains all facets of drive operation. Comes complete with copiers and maintainence utilities.
- **Packed with convenient features** - The CMD HD Series hard drives come with features like our SWAP buttons, Front Panel Partition Selection, and more.

**HD-20 CALL HD-40 $599.95**
**HD-100 $799.95 HD-200 $999.95**

# RAMLink™

**Power Backed REU Interface and Expandable RAM Disk**

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- **User Expandable** - Internal RAMCard allows expansion up to 16 Mb by using standard SIMM's.
- **FAST** - Up to 400x faster than a 1541; 20x faster than RAMDOS; Built-in JiffyDOS plus parallel interface to speed access to CMD Hard Drives.
- **Easy to Use** - Plugs into the Cartridge Port. Operates like a standard disk drive. File and disk copiers included along with partitioning and GEOS support utilities.
- **RL-DOS** - Organize RAM into manageable partitions that emulate 1541, 1571, & 1581 drives or expand to the full RAM capacity with MS-DOS style subdirectories.

| | | | |
|---|---|---|---|
| RAMLink (no RAMCard) | $179.95 | Battery w/cable | $24.95 |
| RAMLink (w/ RAMCardII) | $219.95 | HD Parallel Cable | $14.95 |
| RAMLink (RAMCardII/RTC) | $239.95 | RTC add-on Kit | $29.95 |
| RAMCard II (with RTC) | $79.95 | 1Mb SIMM | $42.00 |
| RAMCard II (without RTC) | $59.95 | 4Mb SIMM | $145.00 |

## Ordering Information and Shipping Charges

**CMD Hard Drives:** Continental US: $25.00 per drive (UPS ground), $35.00 (2nd-Day), $45.00 (Next-Day). Canada: $50.00 (Airmail). COD to U.S. only $5.00 add'l charge. Foreign prices: Add $100.00 to U.S. Retail Price
**JiffyDOS:** Add $5.50 per order (UPS ground), $10.00 (2nd-Day Air), plus $5.00 for APO, FPO, AK, HI, and Canada, or $15.00 for overseas orders. No add'l shipping if ordered with any hard drive. COD's add'l $5.00
**RAMLink:** US: $12.00 (UPS), $20.00 (2nd day), COD add $5.00. Canada: $23.00. Foreign: CALL
**RAMDrive:** US: $8.50 (UPS), $16.00 (2nd day), COD add $5.00, Canada $18.00. Foreign: CALL
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# MAIL RUN

*The latest collection of hints, tips and questions. Plus: Early returns from* RUN*'s latest reader survey.*

### AN ALTERNATE GAME CONTROLLER

In your September/October issue there is a letter from John Obeso of Palm Coast, FL, in which he states that the Sega Genesis control pad works in the Commodore's joystick port 2. Well, it does, but it locks up part of the keyboard.

The QuickShot WizMaster, model #QS-118F works in either port without locking up the keyboard, and it comes with two screw-in joysticks for the thumb pad. I bought one at my Amiga dealer for only $16.

—E.L. MONTGOMERY
FAIR PLAY, MO

### THE PAPER CHASE

I usually don't write to you folks at *RUN* about anything, but I don't like the way the July/August magazine looks. I have problems reading the print and this was not the case with the last issue. Please try a different paper or go back to the kind you used in the May/June issue.

—ROGER GOFF, SR.
UTICA, NY

*You'll be pleased to know that we've decided to return to the matte finished paper that you find easier to read. In addition, this paper is less expensive, it's made from recycled material, and is itself recyclable. (We are not, however, suggesting that any of you recycle your issues of* RUN *magazine!)*

—EDITORS

### A NEW LOOK FOR THE 1000C

In the March/April Mail RUN I read a piece about the Star NX-1000C printer. I've found that not only does the Epson FX-80 work for GEOS, but also with 90 percent of my other software. It all prints better using the Epson mode, getting the 80-dpi print density (with DIP switch 5 off, and 1 off, depending on whether the software sends a carriage return or not).

A friend of mine owns a Sears RS-2000, and the Epson FX-80 mode works on his printer too, giving 80-dpi print density. Just switch to Epson mode and turn the carriage return off, depending upon the software.

—CHRIS WATKINS
WELLINGTON, OH

### MADNESS.ML

I typed in Volleybound from the November/December '91 issue using the checksum, but all I saw on the screen was the line scan. I bought ReRUN and I found two files in the directory, VOLLEY.HEX and VOLLEY.ML. When I load VOLLEY.ML, all it lists is 10 SYS2061. Did I miss something in the magazine?

—JIM LAWS
SANDUSKY, OH

*First, comparing ReRUN programs with their type-in counterparts can be misleading. In* RUN*, we make the program short and easy to type. On the ReRUN disk, however, we will sometimes use extra space to make a program accessible to ReRUN's menu system.*

*Second, regarding the ML programs, the line 10 SYS 2061 is accurate; you cannot list machine language (ML) files the way you can Basic files. Therefore, we publish Basic language programs that, when you run them, create ML files.*

*Volleybound (and Bombard in this issue) are Basic loaders—Basic programs that create ML programs. The ML file that a Basic loader creates contains the code for the program. For example, the Basic loader for Volleybound creates VOLLEY.ML. After typing in and running the loader, you play Volleybound by loading and running VOLLEY.ML with the command* `LOAD"VOLLEY.ML",8,1`

—EDITORS ■

## FROM RUN'S READER SURVEY

*Here are some comments selected from your overwhelming response.*

"I'm on a fixed income and I'm trying to help inner-city kids. We use our equipment to communicate with other volunteers."

"The cost seems excessive, especially when other computer magazines five times the size sell for the same price."

"Hang in there—raise the subscription price if necessary."

"If you delete any more pages, all I'll get for my money will be the cover."

"Put all the advertising at the end of the magazine."

"I enjoy the cult status of being a Commodore user."

"Don't assume all your readers are computer literate..."

"Change nothing."

"If there is anything I want at my age (72 years), it's for the Commodore publications to keep publishing; for the user's group to stay alive; and for my system to provide the solid support it has for the last seven years."

"I'm mostly concerned with keeping track of investments, property, documents, and so on."

"See if it would be economically worthwhile to import and distribute some European software."

"Your article says there are 35,000 shareware programs. You should consider describing and reviewing them in a regular column."

"I laugh at ads that sell C-64 peripherals at costs so high you could buy an IBM clone for the same price ($400 for an XT with a hard drive and a VGA card)."

# MAGIC

*Monitor your Basic programs as they execute, line by line, and save sections of memory to disk with a relocatable C-64 program.*

By TIM WALSH

## $5F4 EASY TRACER 64

EZ Tracer 64 lets you know which line your Basic program is executing so you can have an answer to that common question, "What is my program doing?" Like the TRON command on the C-128, this program gives your 64 a Trace-like command that monitors program activity by placing the line number on the screen of each line as it is executed. For clarity, the executing line number is preceded with an "IN."

After loading and running the listing, a SYS679 will enable it. To Disable EZTracer, just type SYS682.

```
Ø REM JESS SOSNOSKI - EZTRACER 64 :REM*113
1Ø PRINTCHR$(147)"{CRSR DN}EZ TRACER-SYS 6
   79 ENABLES, SYS682 DISABLES     :REM*37
2Ø DATA 76,183,2,173,79,228,141,8,3,173,8Ø
   ,228,141,9,3,96,173,8,3,141,244 :REM*28
3Ø DATA 2,173,9,3,141,245,2,169,2Ø9,141,8,
   3,169,2,141,9,3,96,255,9,11,141 :REM*45
4Ø DATA 2Ø6,2,142,2Ø7,2,14Ø,2Ø8,2,165,57,1
   66,58,224,255,24Ø,3,32,194,189  :REM*86
5Ø DATA 169,32,32,21Ø,255,173,2Ø6,2,174,2Ø
   7,2,172,2Ø8,2,76,228,167,-1     :REM*11Ø
6Ø READA:I=I+1:IFA>-1THENPOKE679+I-1,A:CK=
   CK+A*I:GOTO6Ø                   :REM*63
7Ø IF CK<>3845Ø5 THENPRINT"DATA ERROR!"
                                   :REM*31
6Ø4 BLOCKS FREE.                   :REM*119
```

—JESS SOSNOSKI, MOUNT CARMEL, PA

## $5F5 DOC WRITER/READER 64/128

Commodore users who upload files to BBS's and networks often like to include documentation. When a file is compressed using an archival program, such as Self-Disolving Arc (SDA) or LYNX, it's generally a good idea to have the documentation file in a form that can be displayed on the screen without the use of a word processor or text editor.

Documentation Writer/Reader consists of two listings that make this job easy. The first, Seq Documenation Maker 64/128, creates a sequentail file on disk. Just load and run this program, enter a filename for the sequential file and type in the documentation. If you want to see a cursor, type up-arrow (↑). When done, type a back-arrow (←) to close the file on disk.

Once the sequential file is on disk, the second listing, Seq Documentation Reader 64/128, will display its contents. Enter the filename at the prompt and the text will scroll across the screen. The next time you want to include docs on disk, be sure to include these short utilities for handling the text.

```
Ø REM SEQ DOCUMENTATION MAKER 64/128 - ANT
  HONY MATOUS                      :REM*2Ø6
1Ø C$=""                           :REM*222
2Ø PRINT"{SHFT CLR} ENTER A FILENAME"
                                   :REM*22
3Ø INPUT F$                        :REM*154
4Ø OPEN2,8,2,F$+",S,W"             :REM*96
5Ø GET A$:IF A$="" THEN 5Ø         :REM*13
6Ø IF A$="{LEFT ARROW}" THEN 9Ø    :REM*121
7Ø IF A$="{UP ARROW}" THEN GOSUB 1ØØ
                                   :REM*162
8Ø PRINTA$;:PRINT#2,A$;:PRINTC$;:GOTO5Ø
                                   :REM*178
9Ø CLOSE 2:END                     :REM*8
1ØØ IF C$="" THEN C$="{CRSR LF}":RETURN
                                   :REM*33
11Ø C$="":RETURN                   :REM*118

Ø REM SEQ DOCUMENTATION READER 64/128 - AN
  THONY MATOUS                     :REM*157
1Ø PRINT"{SHFT CLR}ENTER FILENAME TO READ:
   "                               :REM*181
2Ø INPUT F$                        :REM*144
3Ø OPEN2,8,4,F$+",S,R"             :REM*216
4Ø FOR L= Ø TO 1: GET#2,A$:PRINT A$;:L=ST
                                   :REM*18
5Ø GET B$:IF B$<>"" THEN GOSUB 6Ø  :REM*1Ø9
6Ø NEXT L:CLOSE 2:END              :REM*8Ø
7Ø GET C$:IF C$="" THEN 7Ø         :REM*81
8Ø RETURN                          :REM*222
```

—ANTHONY MATOUS, PENN RUN, PA

## $5F6 RELOCATABLE BSAVE 64

While C-64 utilities for easily saving sections of memory to disk (like BSAVE in C-128 Basic 7.0) have been published in Magic before, Relocatable BSAVE 64 is a great solution for programmers who need to do this. It is relocatable in memory, so you can alter its starting address to suit your needs by changing the value of AD to the desired location. Once you get it up and running, use the following command:

```
SYS ADDRESS, START, END, FILENAME, DEVICE
```

```
Ø REM RELOCATABLE BSAVE 64 - JESS SOSNOSKI
                                   :REM*232
1Ø PRINTCHR$(147)"{CRSR DN}RELOCATABLE BSA
   VE 64"                          :REM*15
11 PRINT"SYS AD,START,END,"CHR$(34)"FILENA
   ME"CHR$(34)",DEVICE             :REM*149
2Ø AD=679                          :REM*5Ø
3Ø DATA 32,253,174,32,158,173,32,247,183,1
   65,2Ø,133,193,165,21,133        :REM*157
4Ø DATA 194,32,253,174,32,158,173,32,247,1
   83,165,2Ø,133,174,165,21        :REM*23
5Ø DATA 133,175,32,253,174,32,212,225,32,2
   34,245,96,-1                    :REM*251
6Ø READA:IFA>-1THENI=I+1:POKEAD+I-1,A:CK=C
   K+A*I:GOTO6Ø                    :REM*64
7Ø IFCK<>14Ø847THENPRINT"DATA ERROR!"
                                   :REM*238
```

—JESS SOSNOSKI, MOUNT CARMEL, PA ■

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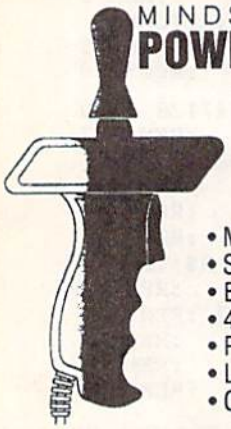
MINDSCAPE
**POWERPLAYERS**
JOYSTICK



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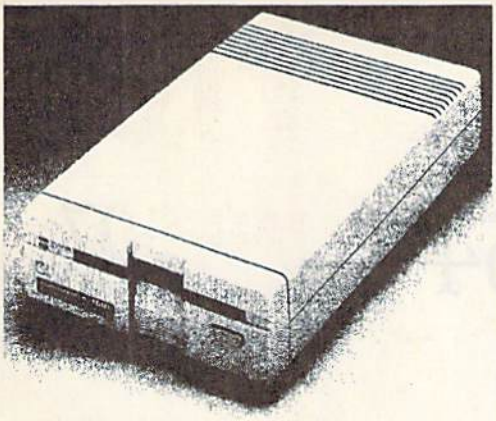

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| APO AE | $8.00 | $1.00 |
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# Super Sort 64



By THOMAS CECHNER

This handy little utility program will sort your disk directories, listing files alphabetically and by type, so you can find what you need quickly. Universal Directory Sort works on 1541, 1571 and 1581 drives. When you're sorting 1571 directories, you must flip the disk and run the sort a second time. This super-fast program also handles disk errors, and resets the drive.

Type in Listings 1 and 2 and save them as BOOTSORT and SORT.SC, respectively. Use *RUN*'s Checksum on page 44 to catch any typing errors. Save both listings to the same disk, then load and run SORT.SC once to create the program DIRSORT.ML. When you want to use the program, simply load and run BOOTSORT as you would any other Basic program. R

*Thomas Cechner is a C-64 fan who lives in Bolinbrook, Illinois.*

**Listing 1. Universal Directory Sort boot program. (Available on the November/December ReRUN disk. To order, call 800-824-5499.)**

```
Ø REM BOOT UNIVERSAL DIRECTORY
  SORT PROGRAM          :REM*128
1Ø IF A=Ø THEN A=1:LOAD"DIRSORT
  .ML",8,1              :REM*175
2Ø SYS 5ØØØØ            :REM*12Ø
```

**Listing 2. Universal Directory Sort source program. (Available on the November/December '92 ReRUN disk.)**

```
Ø REM THIS LIST 1 CREATES (AND
  SHOULD NOT BE CALLED) DIRSORT
  .ML                   :REM*182
5 OPEN 8,8,8,"DIRSORT.ML,P,W"
                        :REM*189
6 CT=Ø:PRINT"{SHFT CLR}":REM*56
1Ø READ A$:IF A$="-1" THEN CLOS
  E8:PRINT:PRINT"ALL DONE!":EN
  D                     :REM*129
12 PRINT"{HOME}READING LINE "+S
  TR$(CT):CT=CT+1       :REM*141
15 IF LEN(A$)<62 THEN 55
                        :REM*254
2Ø B$=MID$(A$,1,2Ø)+MID$(A$,22,
  2Ø)+MID$(A$,43,2Ø)    :REM*242
25 FOR I=1 TO 3Ø        :REM*181
3Ø C$=MID$(B$,(I*2)-1,2):H$=LEF
  T$(C$,1):L$=RIGHT$(C$,1)
                        :REM*2Ø9
35 H=VAL(H$):IF H$>"9" THEN H=A
  SC(H$)-55             :REM*85
4Ø L=VAL(L$):IF L$>"9" THEN L=A
  SC(L$)-55             :REM*136
45 BY=H*16+L:PRINT#8,CHR$(BY);
                        :REM*67
5Ø NEXT:GOTO 1Ø         :REM*115
55 IF LEN(A$)<21 THEN B$=A$:GOT
  O 7Ø                  :REM*184
6Ø IF LEN(A$)<42 THEN B$=LEFT$(
  A$,2Ø)+RIGHT$(A$,(LEN(A$)-21
  )):GOTO 7Ø            :REM*176
65 B$=LEFT$(A$,2Ø)+MID$(A$,22,2
  Ø)+RIGHT$(A$,LEN(A$)-42)
                        :REM*14Ø
7Ø FOR I=1 TO LEN(B$)/2:REM*221
75 C$=MID$(B$,(I*2)-1,2):H$=LEF
  T$(C$,1):L$=RIGHT$(C$,1)
                        :REM*14Ø
8Ø H=VAL(H$):IF H$>"9" THEN H=A
  SC(H$)-55             :REM*56
85 L=VAL(L$):IF L$>"9" THEN L=A
  SC(L$)-55             :REM*84
9Ø BY=H*16+L:PRINT#8,CHR$(BY);
                        :REM*148
95 NEXT:GOTO 1Ø         :REM*16Ø
1ØØ REM HEX DATA FOR UNIVERSAL
  DIRECTORY             :REM*239
1Ø1 DATA 5ØC3D8A94Ø2Ø9ØFF2Ø76*C
  CA9ØØ8D52Ø38D15DØ8D*6CØ38D3
  4Ø3A2Ø49D39Ø3         :REM*141
1Ø2 DATA CADØFA2Ø4ACC8D4FØ38D*2
  1DØA9ØC8D2ØDØ2Ø4ØCB*A91F2ØD
  2FFA2Ø5AØØ418         :REM*38
1Ø3 DATA 2ØFØFFAE59CDAØØ1B959*C
  D2ØD2FFC8CADØF6AE9B*CCAØØ1B
  99BCC2ØD2FFC8         :REM*45
1Ø4 DATA CADØF62Ø55CCA9Ø88D38*Ø
  32ØCCFFA9ØØ2ØEACAA9*ØF2ØC3F
  F2ØB7FFDØØDEE         :REM*231
1Ø5 DATA 52Ø3AD38Ø338E9Ø8AADE*3
  AØ3EE38Ø3AD38Ø3C9ØC*DØD738A
  D52Ø3C9Ø1BØØ3         :REM*7Ø
1Ø6 DATA 4C76CCDØØ34CDCC4A2Ø7*A
  ØØ7182ØFØFFA9972ØD2*FFAE2ØC
  DAØØ1B92ØCD2Ø         :REM*238
1Ø7 DATA D2FFC8CADØF6A9ØØ8D56*Ø
  3A2Ø9AØØ3182ØFØFF2Ø*FFCBA99
  52ØD2FFA9ØØ8D         :REM*137
1Ø8 DATA 54Ø3A9388D38Ø3A2128E*3
  7Ø3A2Ø98E58Ø3AE54Ø3*A9ØØDD3
  AØ3FØ36EC56Ø3         :REM*248
1Ø9 DATA DØØ5A9122ØD2FFEE58Ø3*E
  E58Ø32Ø2ØCBA92Ø2ØD2*FFAD38Ø
  338C937BØØ6AD         :REM*249
11Ø DATA AACC2ØD2FFAD38Ø32ØD2*F
  FA92Ø2ØD2FFA9922ØD2*FFEE38Ø
  3A93ACD38Ø3DØ         :REM*2ØØ
111 DATA Ø8A93Ø8D38Ø3CE37Ø3EE*5
  4Ø3AD54Ø3C9Ø4DØA42Ø*13CBC9Ø
  DFØ48C987FØØ4         :REM*57
112 DATA C988DØ1CEE56Ø3A9Ø4CD*5
  6Ø3DØØ5A9ØØ8D56Ø3A9*ØØAE56Ø
  3DD3AØ3FØE74C         :REM*1Ø7
113 DATA 1DC4C985FØØ4C986DØCD*C
  E56Ø3AD56Ø3C9FFDØØ5*A9Ø38D5
  6Ø3A9ØØAE56Ø3         :REM*171
114 DATA DD3AØ3FØE74C1DC418A9*Ø
  86D56Ø38D38Ø32ØE1CA*9ØØ34C7
  6CCAØFFA9Ø285         :REM*88
115 DATA Ø2A2ØF2ØC6FF2ØCFFFC9*2
  CDØØ7C6Ø2FØØA4CF8C4*C8996EØ
  34CF8C488B96E         :REM*113
116 DATA Ø38D43Ø3A9Ø2AE38Ø3AØ*Ø
  22ØBAFFA9Ø1A29AAØCC*2ØBDFF2
  ØCØFF9ØØ34C76         :REM*35
117 DATA CC2Ø7CCAAD46Ø3FØ1A2Ø*C
  CFFA91C2ØD2FFAEABCC*AØØ1B9A
  BCC2ØD2FFC8CA          :REM*226
118 DATA DØF64C64CCA9972ØD2FF*E
  E58Ø3EE58Ø3A9ØB8D37*Ø32Ø2ØC
  BAECØCCAØØ1B9         :REM*123
119 DATA CØCC2ØD2FFC8CADØF638*2
  ØFØFF8E58Ø38C37Ø3A9*9Ø2ØD2F
  F2Ø2FCB8C4AØ3         :REM*1Ø
12Ø DATA 8C4CØ38C52Ø32ØD8CA2Ø*8
  9C9FØØ34C64CC2Ø43CA*A9ØØ85Ø
  22Ø28CCA91E8D         :REM*185
121 DATA 48Ø3A9ØØ8D4EØ32ØCFFF*3
  8E981BØØ6CE4EØ34CD4*C5AABDF
  BCCC98ØDØØEEE         :REM*129
122 DATA 52Ø34CD1C52ØCFFFAE4E*Ø
```

*No matter what disk drive you use, this fast sort program will impose order on your mixed-up directories.*

```
    3D00320OBCBCE480 3D0*F0AD4E0
    3D0O8EE4A03D0          :REM*25
123 DATA 03EE4C03A920186502 85*0
    2F00E20CFFF20B7FFD0*062 0CFF
    F4CA3C5AD500 3          :REM*162
124 DATA 300 34C91C520CCFF1898*6
    5FD900 2E6FE38E91E85*FDB002C
    6FEEE5803A90B          :REM*7
125 DATA 8D37032020CBA9972 0D2*F
    FAEF3CCA001B9F3CC20*D2FFC8C
    AD0F6A90D20D2          :REM*6
126 DATA FFA900850 8D643AD4C*0
    3D00BA9013 8CD4A0390*034CFAC
    6A5012 9FE850 1          :REM*101
127 DATA A000A5FE85FC85FAA5FD*8
    5FB38E91E85F9B002C6*FA4C7DC
    6C8C001D002A0          :REM*173
128 DATA 03C013F009B1FB38D1F9*F
    0EE900 34C9CC6A01E8C*6403 88B
    1F9AAB1FB91F9          :REM*232
129 DATA 8A91FB98D0F2A5FA85FC*A
    5F985FB38E91E85F9B0*02C6FAA
    000A5FA38CD36          :REM*17
130 DATA 039000FF002B008A5F938*C
    D3503900 34C7DC6A900*CD6403D
    00 34CFAC68D64          :REM*139
131 DATA 03E602AD3503 18691E8D*3
    5039003EE36 03A5FE38*CD36039
    00FF002B008A5          :REM*216
132 DATA FD38CD3503900 34C5AC6*A
    D00A0C980F00 34C59C8*204 0CB2
    00FCC202FCBA9          :REM*116
133 DATA 008D5603A90D8D3703A9*0
    78D5803202 0CBA9952 0*D2FFAD5
    603D00AA9122 0          :REM*26
134 DATA D2FFA91F20D2FFAE3ACD*A
    001B93ACD20D2FFC8CA*D0F6B93
    ACD20D2FFEE58          :REM*105
135 DATA 03EE5803202 0CBA9952 0*D
    2FFAE4ACDA001B94ACD*20D2FFC
    8CAD0F6202FCB          :REM*192
136 DATA 8402E602A9952 0D2FFAD*5
    603C502D00AA9122 0D2*FFA91F2
    0D2FFA9108D48          :REM*127
137 DATA 03A000B1FDC980D02AEE*5
    8032020CBA003B1FDC9*A0F0092
    0D2FFC8CE4803          :REM*222
138 DATA D0F1A9922 0D2FF18A91E*6
    5FD85FD900 2E6FE4C6A*C72013C
    BC90DF035C985          :REM*229
139 DATA F004C986D008CE56033 0*1
    F4C12C7C987F004C988*D0E1EE5
    603AD52 0338CD          :REM*213
140 DATA 5603B005A9008D5603 4C*1
    2C7AD52038D5634C12*C72040C
    BAE5603F06C2 0          :REM*216
141 DATA 2FCBCAF00EA91E1865FD*8
    5FD900 2E6FECAD0F2C8*B1FD8D6
    6032 04ACC8D4F          :REM*188
142 DATA 03A9038D5A038D9803 20*5
    5CC8D6C038D3403A930*8D68038
    D6A038D5E03A9          :REM*115
143 DATA 338D5C03AD6603EE6A03*3
    8E90A10F8CE6A031869*0A186D6
    8038D6803 4C51          :REM*42
144 DATA C5AD4C03D00BA9013 8CD*4
    A039 0034C54C9382 0F0*FF8E580
    3A90B8D3703 20          :REM*86
145 DATA 20CBA9972 0D2FFAE6CCD*A
    001B96CCD20D2FFC8CA*D0F6A99
    02 0D2FF382 0F0          :REM*175
146 DATA FF8E5803 8C3703 202FCB*8
    C9603 20D8CAA900850 2*20CFCAA
    E9603EE9603BD          :REM*121
147 DATA 9803 2066CAAE9603BD98*0
    38D5A03AD4A0338E908*8D4A039
    00AD020AD4C03          :REM*54
148 DATA D01B4CE0C8AD4C03F006*C
    E4C034CEDC8A9008D66*03A9FF8
    D5A03EE4F0320          :REM*23
149 DATA 17CA20CCFF2028CCA202*2
    0C9FFAD6603 20D2FFAD*5A0320D
    2FFA91E8D4803          :REM*182
150 DATA B1FDF00C38E980AABD00*C
    D4C1CC9B1FD20D2FFC8*D002E6F
    ECE4803D0F1C6          :REM*238
151 DATA 02F00BA9002 0D2FF20D2*F
    F4C07C920CCFFCE6C03*2089C9E
    E6C03AD4603D0          :REM*23
152 DATA 08AD4F03F0064CA4C84C*6
    4CC2076CCEE5803EE58*03A00C8
    C37032020CBA9          :REM*134
153 DATA 1F20D2FFAE8ACCA001B9*8
    ACC20D2FFC8CAD0F620*13CBC95
    9D0034C50C3A9          :REM*199
154 DATA 9320D2FF6020CCFFA20F*2
    0C9FFA9552 0D2FFAD6C*03F005A
    9324CA2C9A931          :REM*77
155 DATA 20D2FFA92C20D2FFA932*2
    0D2FFA92C20D2FFA900*20D2FFA
    92C20D2FFAD6A          :REM*225
156 DATA 0320D2FFAD6803 20D2FF*A
    92C20D2FFAD5E0320D2*FFAD5C0
    320D2FFA90D20          :REM*36
157 DATA D2FF20CCFFA9008D4603*A
    20F20C6FF20CFFF38C9*32901EA
    002CE4603 48A9          :REM*35
158 DATA 0D20D2FFA91C20D2FF68*2
    0D2FF20CFFFC92CD0F6*88D0F3A
    D4603602 0CCFF          :REM*118
159 DATA A20F20C9FFA9422 0D2FF*A
    92D20D2FFA9502 0D2FF*A92C20D
    2FFA9322 0D2FF          :REM*224
160 DATA A92C20D2FFA9302 0D2FF*6
    020CFCA20CCFFA2022 0*C6FF20C
    FFF20CFFFD002          :REM*111
161 DATA A9FFAE9639D9803EE96*0
    38D5003315EE5E0338*E90A10F
    8CE5E031869 0A          :REM*52
162 DATA 186D5C038D5C0360A9FF*8
    D4603 20CFCAAD4303C9*37F004C
    934D01BA9318D          :REM*11
163 DATA 6A03A9388D6803EE4603*E
    E5C03A9018D9803A912*8D66036
    0C938D021A928          :REM*3
164 DATA 8D6603A9348D6A03A930*8
    D6803EE4603EE5C03EE5C03EE5
    C03A9038D9803          :REM*173
165 DATA 60A9308D5C038D5E0360*A
    9308D6003 8D6203602 0*CCFFA2B
    EA0CCA9022 0BD          :REM*115
166 DATA FFAE3803A00FA900F20BA*F
    F2 0C0FF60A9122 0D2FF*A920A21
    A20D2FFCAD0FA          :REM*164
167 DATA 6091FDC8D002E6FE6020*C
    CFFA9 0085C6220E4FFF0*FB60AE5
    8039848AC3703          :REM*210
168 DATA 1820F0FF68A860A000A9*0
    085FD8D3503A9A085FE*8D3603 6
    0A9932 0D2FFA9          :REM*77
169 DATA 1F20D2FFA9178D18D0A9*B
    020D2FFA9C0A2262 0D2*FFCAD0F
    AA96E8D2704A9          :REM*87
170 DATA 068D27D8A91785 02A201*8
    E5803A0278C3703202 0*CBA9DD2
    0D2FFEE5803C6          :REM*142
171 DATA 02D0F1A97D8DE707A906*8
    DE7DBA9268D3703202 0*CBA9C02
    0D2FFCE3703D0          :REM*133
172 DATA F3A96D8DC007A9068DC0*D
    BCE5803202 0CBA9DD20*D2FFCE5
    803D0F3A91C20          :REM*22
173 DATA D2FFEE5803A0078C3703*2
    020CB20FBCAEE5803 20*20CBA99
    5204D2FFAE05CD          :REM*103
174 DATA A0018C9603B905CD20D2*F
    FC8CAD0F6EE5803202 0*CBA91C2
    0D2FF20FBCAA9          :REM*229
175 DATA 0D20D2FF60AED0CCA001*B
    9D0CC20D2FFC8CAD0F6*60A003A
    2058E5803182 0          :REM*146
176 DATA F0FFA9972 0D2FF20FFCB*A
    9952 0D2FF602020CBEE*6003AD6
    003C93AD08A9          :REM*2
177 DATA 308D6003EE6203AD6203*2
    0D2FFAD6003 20D2FF60*A228A9F
    F9D9703CAD0FA          :REM*92
178 DATA 6202FCBA900A2C3200B*C
    BE4FED0F9602 0CCFFA2*0F20C9F
    FA9552 0D2FFA9          :REM*130
179 DATA 492 0D2FF20CCFFA9022 0*C
    3FFA90F20C3FFA5019 0*0185016
    00F614E4F5448          :REM*230
180 DATA 45523F2059204F522 04E*2
    30E634F505952494748*542 0313
    939323112754E          :REM*80
181 DATA 4B4E4F574E2044524956*4
    52054595045554590F72*4541444
    94E4720534543          :REM*83
182 DATA 544F522022463120463 3*2
    0555020204635204637*20444F5
    74E2020524554          :REM*51
183 DATA 55524E20454E54552 07*7
    34F5254494E47848182*83 80858
    28384811A2075          :REM*107
184 DATA 6E6976657273616C2064*6
    9726563746F72792073*6F72742
    019734F525420          :REM*102
185 DATA 4449534B2049 4E2057 48*4
    943482044524956453F*0E74404
    9532044495245          :REM*251
186 DATA 43544F5259 0D0D735542*2
    044495245435 44F5259*0D12425
    92074484F4D41          :REM*136
187 DATA 532063454348 4E45522 0*0
    F77524954494E472053*4543544
    F522 0          :REM*121
188 DATA -1          :REM*46■
```

# MEGADRI

**How do you fit 3 megs of data onto one 3½-inch disk?**

**Ask the folks at Creative Micro Designs.**

By TIM WALSH

Benton Drive is little more than the driveway for a nondescript building in the industrial section of scenic East Longmeadow, Massachusetts. Nothing out of the ordinary: The building is home to the obligatory limo service, a sheet metal shop, and a tidy, well-lit computer firm with nary a dozen employees. Measured by other business standards, the building on Benton Drive is a small-time rental property inhabited by small-time shops.

But if you're a Commodore user, that unimposing building houses one of the last bastions of hope, innovation and surprise: Creative Micro Designs. Whether you're seeking RAM expansion units, data storage systems, software, or even cables for your modem, CMD seemingly offers everything Commodore enthusiasts need to beef up their computers.

Although our numbers are dwindling, CMD knows that this market still hungers for good hardware. And, to satiate our appetite, CMD is about to release a pair of new storage devices that will humble even MS-DOS masters.

### Meet the FD Drives

You aren't going to believe this, but Creative Micro Designs has put together a new series of 3½-inch disk drives that can put up to 3.2 megabytes of data onto a single floppy disk. To date, such drives have only been available at the high end of the PC market, but here they are for our modest Commodores.

Referred to as the FD drives, which stands for floppy disk drives, the series consists of the FD-2000 and FD-4000. The difference between the two lies in their respective capacities: The FD-2000 holds up to 1.6 megabytes of data on a high-density 3½-inch disk, while the FD-4000 holds up to 3.2 megs of data on an extended-density 3½-inch disk. That represents quite an improvement over the 880K limit imposed by Commodore's 1581 drive, which, you may be aware, is becoming increasingly harder to find.

Consider that a 3½-inch disk formatted on the FD-4000 is capable of storing almost four times as much data as a 1581-formatted disk. Now consider that the FD-4000 employs extended-density disk technology available only on the highest-priced PCs. Impressive, isn't it?

Don't worry if you're a long-time 1581 user, because your collection of 1581-formatted disks are 100-percent readable by either FD drive. Both the FD-2000 and the FD-4000 support the standard 800K double-sided, double-density format as well as a 1600K high-density format. In addition, the FD-4000 supports the 3200K extended-density format mentioned above.

To use the 1600K and 3200K formats, however, you will need to purchase special disks, which, as you might expect, are called high-density (HD) and extended-density (ED), respectively. These disks are available through CMD and other national computer

Software stockpiling: The FD-2000 pictured here will store up to 1.6 megs of data on a 3½-inch disk. Its big brother, the FD-4000, will let you amass up to a whopping 3.2 megs.

supply companies. (See Figure 1, below, for a summary of the disk/drive compatibility.)

### Managing All that Memory

Anyone familiar with Commodore drives should find the FD drives simple to set up. Just plug the drive's serial cable into your computer, or daisy chain it to your other drives. Then plug the power supply into the nearest outlet.

A handy utility disk called FD Tools comes with the drives. These tools let non-computer types access the various FD features, such as the disk formatting commands, without committing lengthy DOS commands to memory. The front plate of the drive shows Error, Access and Power lights, plus a Swap button unique to these drives. A combination of presses on this button swaps the drive between device number 8, 9 or the default setting of the DIP switches on the unit, so you don't have to send commands or fiddle with hard-to-reach DIP switches. (Like the Commodore 1571 and 1581, each of the FD drives is equipped with a bank of DIP switches in the rear of the unit for setting the device number.)

**Figure 1. Format and disk drive compatibility.**

| Format | 1581 | FD2000 | FD4000 |
|---|---|---|---|
| 800K[1] | • | • | • |
| 1600K[2] | | • | • |
| 3200K[3] | | | • |

[1] Requires double-sided, double-density (DSDD) disks.
[2] Requires high-density (HD) disks.
[3] Requires extended-density (ED) disks.

Hidden from view in the FD ROM is a new Disk Operating System (DOS) that improves read/write performance and capacity, while adding low-level disk commands, wildcards, directory paths and a multitude of other functions.

Once you're up and running with an FD drive, you'll naturally want to format some disks. As you might expect with disks of this capacity, the FD drives make liberal use of partitioning, so you won't have to watch hundreds of filenames scroll by whenever you want to find a file. (See "Partitioning for Beginners," next page, if you're unfamiliar with the technique.)

When it's time to partition an FD disk, most users will want to pull out FD Tools to simplify the process. If you're a do-it-yourselfer, the manual provides, in detail, the commands for Basic 2.0, 7.0 and JiffyDOS to customize your FD-formatted disks.

Further enhancing the DOS commands in the FD drive is the use of paths to access subdirectories more quickly and easily. Again, if you are familiar with MS-DOS or Amiga DOS, you will be comfortable with the FD syntax. Like those operating systems, FD-DOS recognizes the slash (/) as the delimiter between directory names. Here is a good ►

example of a path that I found in the FD manual:

```
LOAD"1/COPIERS/:COPY",10
```

In this example, 1 represents partition 1, COPIERS represents a subdirectory in the partition, and COPY is the name of the file to be loaded. While it can be set to virtually any legal number, 10 is the device number of the FD drive in the example. Because this is a 64-specific command, the above example would also work in 128 mode and on JiffyDOS-equipped computers.

Commodore users familiar with RAMLink and RAMDrive will be happy to note that Creative Micro Designs has continued the tradition of creating drive-emulating partitions. To get a 1541, 1571 or 1581 partition on your FD disk, just specify the partition type when setting up your disks.

**"Don't worry if you're a long-time 1581 user, because your collection of 1581-formatted disks are 100-percent readable by either FD drive."**

### Watch Them Run: The Performance Stats

So, with all of this extra space, these new disk drives must be slow as molasses in January, right? Guess again. The FD 2000 beat the 1581 in a side-by-side performance comparison. When loading and saving a 124-block Basic file, the FD drive was faster than the 1581, particularly in C-128 mode, where the load time was cut in half. (See Figure 2, below left, for the results.)

I performed all the tests using the same 1581-formatted disk (because the 1581 cannot read an FD-formatted disk). No disk enhancements were used that might skew the figures.

**Figure 2. Time required, in seconds, to load and save a 124-block Basic file.**

| | 1581 | FD 2000 | Difference |
|---|---|---|---|
| Load, 128 mode | 9.5 | 5.2 | 4.3 |
| Save, 128 mode | 26.0 | 22.9 | 3.1 |
| Load, 64 mode | 61.0 | 55.0 | 6.0 |
| Save, 64 mode | 44.0 | 42.2 | 1.8 |

### Documentation

CMD apparently spared no expense in developing the documentation for these new disk drives. Between the manual and the FD Tools utility disk, even low-tech users should be able to tackle almost every non-programming aspect of the drives.

For programmers and developers, the documentation contains detailed, extensive notes on physical disk formats, directory file entry formats, BAM (Block Allocation Map) and so on. Of particular interest to both novice and experienced disk-drive programmers are the tables that list the FD series Burst Command Instruction Set, bit-by-bit, for optimizing the access speed when reading and writing data to and from the drives.

And, if you can't find the information you need in the manual, the Creative Micro Designs technical staff is only a phone call, e-mail or fax/letter away.

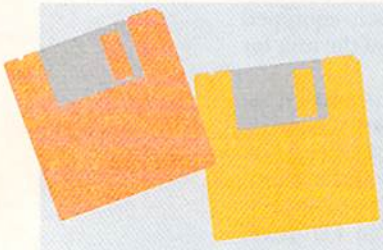
### Say It Ain't So, Joe

What's wrong with the FD drives? Not much. Mechanically and technically, months of abuse and general mistreatment revealed no fault with the unit that I tested. I do, however, have two objections. First, I don't care for the matte black finish; an FD drive wouldn't look out of place in an audio rack, but it casts an odd, unbalanced appearance when placed next to the various putty-colored Commodore and CMD components in my computer system.

My second objection is the timing of the release. If this was, say, early 1988 instead of late 1992, the FD series would be a strong argument for other manufacturers to stay in the market and support their users. Unfortunately, while the FD drives are by no means too little, they almost certainly are too late. Their release at this stage of the 8-bit life-cycle will have no effect on third-party developers who've long since moved on to greener pastures.

Even so, these are stunning products. With very respectable access times and their immense storage capacity, these little black drives will leave my "hi-tech" MS-DOS and Amiga drives green with envy. ■

*Tim Walsh has been writing for* RUN *for, well, almost forever. His articles, reviews and online support have continually been a positive force in Commodore computing.*



## Partitioning For Beginners

Partitioning is the process of breaking down the disk into multiple directories, which simplifies file management. For example, you can isolate your word processing files into one partition, your graphics files into another partition and your database files in yet another. The partitions themselves can then be broken down into subdirectories.

For example, you might have one subdirectory in your word processing partition for correspondence and a second subdirectory for reports.

Don't let the terminology intimidate you—anyone familiar with the concept of subdirectories on other computer platforms, or even the partitioning of 1581-formatted disks will be right at home with the FD drives.

# GEOS 102

*In Part II of our GEOS tutorial, learn how to boot GEOS and navigate the desktop.*



By STEVE VANDER ARK

In our first tutorial, GEOS 101, we discussed the concepts underlying the GEOS environment. We saw how GEOS uses the disk drive, talked briefly about GEOS file structures, and discussed the pros and cons of hi-res (pronounced high-rez), the display mode used by GEOS. We mentioned the "virtual page" concept and talked about using a point-and-click interface.

That kind of background information is important for understanding what you see on your screen, but now it's time to leave theory behind and fire up GEOS. In this session, I'll talk about the dreaded GEOS "installation" procedure, the copy protection scheme, and finally the deskTop, the screen most people think of as GEOS itself. So break out your boot disk, hit the switch on your power strip, and let's explore GEOS!

## Lesson 1: Boot GEOS

Type LOAD"GEOS",8,1 to start GEOS from drive 8. (GEOS can be booted from either drive 8 or 9, so make sure you use the correct drive number in your Boot command). If you're using the 128 version, just type BOOT or let the disk autoboot as you power up. It takes a few moments for GEOS to load into your computer's memory. During that time it sends some code to your drives to modify their load and save functions and "teach" them how to get along in the GEOS environment. The drives need that code to operate under GEOS, so if you turn one of them off during a GEOS session and then turn it back on, it won't work—the system will crash.

## Lesson 2: Copy Protection

If this is your first time booting GEOS, brace yourself: You're about to come face to face with GEOS's copy protection scheme. While the system is booting, let me explain how GEOS copy protection works. (The installation will make more sense to you if you know something about what GEOS is doing.)

Each system disk is assigned a serial number, and each application you use with that system disk is automatically imprinted with that serial number. The first time you use geoWrite, for example, you'll need to "install" the application, encoding the geoWrite disk with the serial number from your system disk.

The result of this procedure is that your particular system disk and your particular copies of geoWrite, geoPublish, or other GEOS applications all get the same serial number. From then on, every time you open one of the applications, your GEOS system checks to see if it has a matching serial number. If so, the application opens and you're in business; if not, GEOS informs you that it can't open that copy of the application.

Translation: Your friends can't use a copy of your geoWrite, and you can't use a copy of theirs. This also means that you can't buy second-hand GEOS applications and use them, because they will have other serial numbers and therefore won't work on your system. And, if you get the installation procedure mixed up on an application, you won't be able to use it.

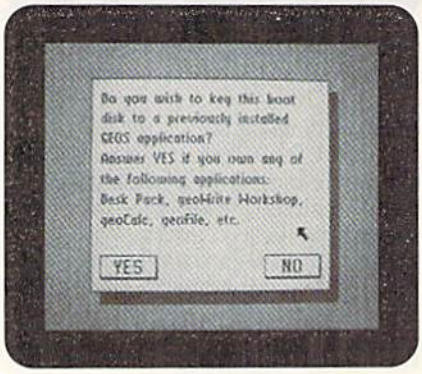
## Lesson 3: Installation

So, when the box shows up on the screen asking if you want to key your disk to an application you've been using, think before you click: You only get one shot. If you answer incorrectly, you could lose the use of your applications. (Remember, this only happens when booting a GEOS system disk for the first time.)

Here's what to do:

- Answer YES if you own other GEOS applications that you've been using with a *different* system disk.
- Answer NO if this is the first time you've used any GEOS application.

If you answer YES, you'll be given a chance to insert an old application disk to let your new system disk copy the old serial number, thereby making it agree with your existing applications. If you answer NO, GEOS assigns a new serial number to your system disk, and you will have to make all of your applications




**Answer carefully! You only get one chance to do this right!**

agree with it. Follow the manual's instructions and the on-screen prompts very carefully.

## Lesson 4: The deskTop

Once past the installation, you're in the wonderful world of GEOS. The screen you see when you first boot GEOS is called the *deskTop*, and its job is to help you handle all the files on your disks, whether programs or data.

This job lies at the heart of everything you do with your computer. Files can be programs to run, such as geoPublish or Tetris; data that your programs use, such as word-processing text; some files are part of the operating system itself. Everything you do on your computer involves files. (And don't ever move or erase files that you don't recognize, especially on the system disk—they might be essential to GEOS right where they are.)

The nice thing about the deskTop is it makes handling all those files quick and easy. For one thing, they're easy to keep straight. To see what I mean, compare what you see when you use the deskTop ►

to the standard directory you see when you type LOAD"$",8 {RETURN} LIST {RETURN}. Sure, you see the file names either way, but in GEOS you see far more than that. Each file not only has a name, but also a little picture, called an *icon*, that gives you an immediate idea of what it is. Take a look at the icons that appear

**You can do all of your file-handling from the deskTop, GEOS's picture-based interface.**

in the rectangular area at the left-center of the deskTop screen. It isn't hard to tell which one represents a printer file; it's the one with the picture of the printer on it. Likewise, the icon for a geoWrite document looks like a stack of paper, the icon for a geoPaint drawing like a frame surrounding some shapes, and so on.

### Lesson 5: Using the Pointer

In this picture-based environment, you don't have to type commands like LOAD"MYFILE.ML",8,1. In fact, that's the whole point: GEOS replaces awkward commands with an intuitive point-and-click interface. A pointer on the screen that's controlled by either a mouse or a joystick lets you reach out and interact with GEOS, its applications, and all of the files on your disks.

The pointer can do more than just point, too. Move the pointer to an icon and click once on your mouse- or fire-button. This will select the icon. Click again to release it. To attach the icon (and it's file) to the pointer, to move it, for example, click twice in rapid succession ("double-click"). Click again to release the file.

### Lesson 6: The Notepad and Icon-based Controls

Now let's look at the area the icons are in; it's called the Notepad. The Notepad holds the icons for all of the files on your disk, though not all of them can be displayed at once. You see only eight icons, but there are more than eight files on the disk. On the top edge of the Notepad is a readout of how many files there actually are, along with some notes on how much of the total disk space those files take up. To view the other icons, you "page" through the Note-pad (so called because it looks like you're flipping through a series of pages). To turn the pages, click on the folded corner in the Notepad's lower left.

This gets to the heart of the way GEOS works. When you use the deskTop, and to some extent GEOS applications, you work intuitively on the screen with the pointer. GEOS makes sense in a real-world sort of way. In your office, if you want to get rid of something, you toss it in the wastebasket. With GEOS, you discard (delete) files by dragging their icons to the wastebasket icon at the lower right corner of the screen. Likewise, to print a file, drag its icon to the printer icon. To copy it to a disk, drop it on that disk's icon. Simple as that.

### Lesson 7: Menus & Dialog Boxes

If you'd rather, you can perform the same activities (deleting, printing, copying) and many others by selecting them from menus that drop down from the top of the deskTop screen. A *menu* in computer lingo, as you might know, is simply a list of choices displayed on your screen from which you make a selection with your keyboard, mouse or joystick.

Look at the series of words printed across the top of the deskTop screen (GEOS, FILE, VIEW, DISK, and so on). This area is the menu bar, and each of those words is the title of a drop-down menu. To open a menu, click on one of the words. To select a command from that menu, either click on the option or type the key combination listed to the right of the command. For example, if you want to rename a file, click once on the file's icon to select it, then click on the word FILE to drop down the File menu, and then click on the option RENAME.

Often, as in this example, GEOS will need some additional information from you, like the new name you'd like to give your file. In these cases, GEOS opens a window on the screen called a *dialog box* that asks you for the information and gives you a place to type your response.

Usually dialog boxes also include at least one *button*; these are small boxes that provide additional choices like CANCEL. To select that option, you "press" the button by clicking on it with your pointer.

### GEOS 103: Setting Up CONFIG and Using Applications

Now that you have a solid understanding of the deskTop, you're almost ready to start using applications. But first, if GEOS is going to work properly, it has to know how many disk drives you have and which type they are. It also has to know what kind of printer you're using. It's easy to fill GEOS in on these details, and you only have to do it once—that is, at least until you change your equipment around.

Next time we'll wrap up our lessons by setting up your Configure file and looking at the main applications you're likely to use with GEOS. See you then. ■

*GEOS wiz Steve Vander Ark lives in Grand Rapids, Michigan, where he teaches the third grade.*

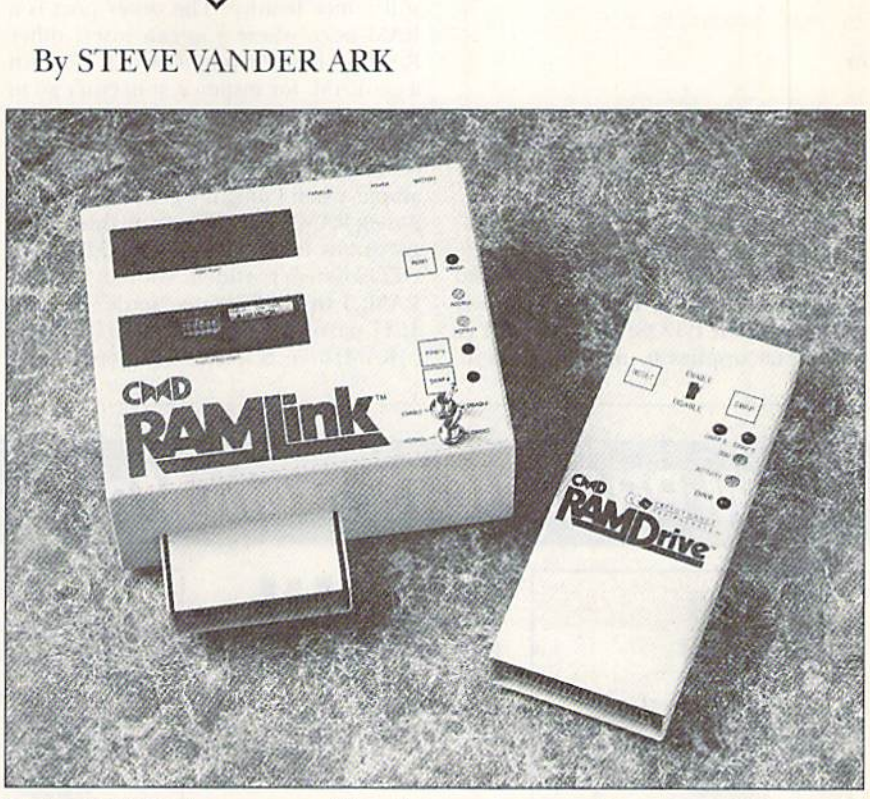
**Double-click with your mouse button to attach a file to the pointer.**

**To get rid of a file, take it to the trash can and drop it in with a click.**

**Drop-down menus and dialog boxes are controlled with the point-and-click method, too.**

# Turbocharge GEOS

*Add RAMLink or RAMDrive to your Commodore and watch GEOS fly!*



By STEVE VANDER ARK

GEOS needs RAM. An REU should be listed on the box under "Hardware Requirements." It gives you speed; it lets you use the hot new GEOS products, like geoCanvas; and it gives you access to all of your disk drives. Without a RAM device you can't have geoPaint on a 1541 disk and expect it to find a geoPaint document on a 1571 disk. GEOS won't even remember that you have more than one type of drive unless you copy your Configure file onto every disk.




## A Little History

When Commodore released the first RAM expansion devices many folks were confused about what to do with them. They plugged them into the back of their machines, but nothing seemed to happen: The extra RAM didn't appear, software didn't work any better, even with the REU set up as a RAM drive few programs could recognize it.

GEOS was one of the first programs to tap the REU's potential by using the extra space for its own code and for a RAM drive that acted just like a 1541 or 1571. And after a short time Berkeley Softworks released their own REU, called geoRAM, that offered 512K for a lower price. But geoRAM worked only with GEOS, and overall it did little to improve on the original REUs.

With all of these RAM devices, including geoRAM, two shortcomings limited their usefulness: First, they offered limited storage capacity, and second, their memory was volatile, which meant that everything had to be backed up to a floppy disk when you shut down and reloaded when you started the next time.

Then, about a year ago, CMD spawned a new generation of RAM expansion devices with RAMDrive and RAMLink. They addressed several of the REUs' shortcomings. They provide the needed RAM space, and by emulating the standard Commodore drives, RAMLink and RAMDrive are compatible with a much wider range of software. With a battery backup and a separate power supply, these units can store data indefinitely, even when you shut down your computer or when a power failure leaves you in the dark. The numerous reviews that have appeared since the release of RAMLink and RAMDrive all note that these devices are GEOS compatible—but "compatible" only hints at what these babies can do for GEOS.

## More Power

When you talk about RAM devices, the bottom line is space. More space equals more power—especially with a behemoth like GEOS. I know there are places that will expand your old REUs and geoRAM units beyond their meager half meg, but you can get RAMDrive shipped with a whopping 8 or 16 megabytes. When you figure that the largest GEOS program out there, geoPublish, is 99K (that's 0.1 meg), that leaves quite a bit of room for data files, fonts, and a whole pile of games.

To access all that extra space, every unit is shipped with a disk of Jim Collette's GEOS utilities. These programs improve your Configure file so GEOS will recognize the extra RAM as one or more drive-emulating partitions.

If you'd like to have your RAM device show up as one big GEOS partition that isn't constrained by emulating a specific Commodore drive, try CMD's gateWay, a replacement for the standard GEOS deskTop. GateWay includes drivers for native mode partitions, which are made up of as many 256-block chunks of memory as you choose.

That's just the beginning. RAMDrive and RAMLink can both be set up to autoboot any program you specify, including GEOS, in either mode. Combine that ►

with gateWay's MakeBoot or geoMakeBoot (both from CMD), and you can boot GEOS straight from RAM—no more boot disk! And it takes less than ten seconds.

There's a catch, though: To autoboot a non-Basic program you have to know the program's beginning address. I don't have a clue about that sort of thing, so I worked around the problem. I wrote a short loader program in Basic with the GEOS Boot command, and I autoboot that instead. Here's what my program looks like for the C-64 and for the C-128:

```
10 LOAD "GEOS",16,1
```

or

```
10 RUN "GEOS128",U16
```

Notice that the drive number is 16 for a RAM device under GEOS.

### What's the Difference?

So far I've used the term "RAM devices" to refer to both RAMLink and RAMDrive. The two units work nearly the same with GEOS; everything I've said so far applies to them both. Still, there are a few differences worth noting.

RAMLink can be purchased with a nifty little clock chip, and CMD includes an autoexec file for your GEOS boot partition (or boot *disk*, if you still have one after this) that automatically sets your GEOS clock.

The most notable differences, though, are RAMLink's two expansion ports into which you can plug other cartridges. One is a pass-through port that can handle utility cartridges. These cartridges aren't typically used with GEOS, but it's still a nice feature. The other port is a RAM port, where you can insert other RAM devices you might own. If you own a geoRAM, for instance, it needn't go to waste once you start using the RAMLink. When you plug in geoRAM, its memory is added to RAMLink's memory. For example, when I plug my geoRAM into my 2-meg RAMLink, I can create three 1581 partitions in addition to the 512-block GEOS system partition. Without the geoRAM, I would have to "settle" for two 1581 partitions. (Life's rough, isn't it?)

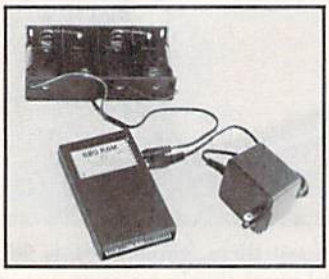
RAMDrive is a smaller, more convenient unit, almost like a pocket-sized disk drive. And, the battery back-up (available for both RAMDrive and RAMLink) will let you carry the unit, with memory intact, from one place to another. I take my RAMDrive to school with me to use on the C-64 in my classroom. (With my autoboot sequence, the students don't even need to type load commands.) I barely even need a disk drive. Of course, RAMDrive doesn't have pass-through ports for adding another REU or a cartridge.

So which one do you buy? That depends on how you plan to use it. If you already own an REU, RAMLink is the way to go. If you run your computer with other cartridges in Direct mode, again you'll want the RAMLink. But, if you want a convenient, portable memory device, on which to carry your entire GEOS arsenal, go with RAMDrive.

Either way, you'll find that this new breed of RAM devices will definitely turbocharge GEOS. ■

*Steve Vander Ark has written megabytes on Commodore computing and GEOS.*


NEW PRODUCTS From Makers of RAMDRIVE



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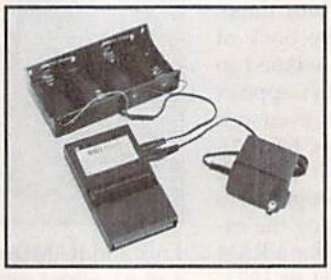

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*Tell a friend you've heard it through the Grapevine.*

# Check Printer 64/128

*Here's a shortcut that takes the longhand out of your favorite first-of-the-month activity: checkwriting.*

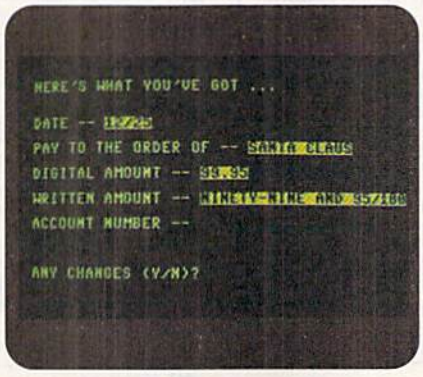


By LENARD ROACH

The first of the month is a day fraught with emotion, and writer's cramp—the rent, the electric bill, the phone bill (and my handwriting is, well, nothing to write home about). I wrote Check It Out to ease the burden. It lets you type in the payee, date, account number, digital amount and written amount, and then prints it onto your wallet-sized checks; all you need to do is sign them. Check It Out works on either the C-64 or the C-128 and with almost any printer.

Type in Check It Out from Listing 1, using the checksum on page 44 to catch typing errors. Save it to disk before running it. When you're ready to use the program, simply load and run it as you would any Basic program.

Check It Out guides you around the check, prompting you to enter the information to be printed. A review screen lets you catch and correct any errors. Before printing, place the check flush with the left edge of the printer and the top of the check level with the print head. Be prepared to make mistakes on the first run. You might want to photocopy or trace some blank checks to practice on; after a few tries, you'll know exactly how to load the check.




**Check It Out lets you review your entries before printing the check.**

If you find there is too much or too little space between the lines or items, refer to "Customizing Check It Out" (opposite page) for tips on how to make it work on your printer. Now, if I could only get it to pay with someone else's money....

*Lenard Roach, part-time comedian and father of two, has been paying on his Commodore for five years...bills, that is.*

**Listing 1. Check It Out Program. (Also available on the November/December ReRUN disk. Call 800-824-5499.)**

```
10 REM CHECK IT OUT     :REM*100
20 POKE53280,0:POKE53281,0:POKE
   646,7                :REM*172
30 AA$="{26 SPACEs}":BB$="{29 S
   PACEs}"              :REM*42
40 CC$="{6 SPACEs}"     :REM*203
50 EE$="{18 SPACEs}":FF$="{19 S
   PACEs}":GG$="{16 SPACEs}"
                        :REM*145
60 PRINT"{SHFT CLR}{CRSR DN}WEL
   COME TO CHECK IT OUT!":PRINT
   "{CRSR DN}MAKE SURE YOUR PRI
   NTER IS ON-LINE."    :REM*170
70 PRINT"{CRSR DN}INSERT A BLAN
   K CHECK INTO YOUR PRINTER{2
   SPACEs}WITH THE TOP EDGE FLU
   SH ";                :REM*75
80 PRINT"WITH THE PRINT{2 SPACE
   s}HEAD.":PRINT"{2 CRSR DNs}P
   RESS {CTRL 9}SPACE{CTRL 0} W
   HEN YOU'RE READY."   :REM*92
90 GETA$:IFA$=""THEN90 :REM*117
100 IFA$<>CHR$(32)THEN90 :REM*2
110 Z$="{SHFT CLR}{CRSR DN}TYPE
    THE DATE YOU WISH ON YOUR
   CHECK.{3 SPACEs}DO NOT ENTE
   R THE YEAR."         :REM*147
120 L$="{CRSR DN}PRESS {CTRL 9}
   SPACE{CTRL 0} TO CONTINUE..
   ."                   :REM*16
130 X$="{CRSR DN}EXAMPLE -- {CT
   RL 9}10/12{CTRL 0} OR {CTRL
    9}02/16{CTRL 0}":PRINTZ$:P
   RINTX$               :REM*220
140 W$="{2 CRSR DNs}PRESS {CTRL
    9}RETURN{CTRL 0} WHEN YOU'
   RE DONE.":PRINTW$:INPUT"{2
   CRSR DNs}";DATE$     :REM*132
150 IFDATE$=""THEN930    :REM*192
160 IFLEN(DATE$)<>5THEN980
                        :REM*206
170 PRINT"{SHFT CLR}ENTER YEAR
   WITH TWO DIGITS.     :REM*68
180 PRINT"{CRSR DN}EXAMPLE: 199
   2 ENTER AS {CTRL 9}92"
                        :REM*37
190 INPUT"{2 CRSR DNs}";YR$
                        :REM*71
200 PAY$="":V$="{SHFT CLR}{CRSR
    DN}TYPE THE NAME OF THE PA
   YEE. DO NOT USE{2 SPACEs}PU
   NCTUATION.":PRINTV$:REM*242
210 U$="{CRSR DN}EXAMPLE -- NEW
    HAMPSHIRE ELECTRIC":PRINTU
   $:PRINTW$:INPUT"{2 CRSR DNs
   }";PAY$              :REM*4
220 IFPAY$=""THEN1010   :REM*184
230 IFLEN(PAY$)>40THEN1070
                        :REM*238
240 S$="{SHFT CLR}{CRSR DN}TYPE
    THE AMOUNT IN DIGITS.":R$=
   "{CRSR DN}EXAMPLE -- {CTRL
   9}10.00{CTRL 0} OR {CTRL 9}
   47.63{CTRL 0}"       :REM*105
250 PRINTS$:PRINTR$:PRINTW$:INP
   UT"{2 CRSR DNs}";B$ :REM*38
260 IFB$=""THEN1100     :REM*109
270 Q$="{SHFT CLR}{CRSR DN}ENTE
   R THE WRITTEN AMOUNT.":P$="
   {2 CRSR DNs}EXAMPLE -- {CTR
   L 9}TEN AND NO/100{CTRL 0}
   OR"                  :REM*8
```

RUN it right: **C-64 and C-128; printer**

```
28Ø O$="{2 CRSR DNs}FORTY-SEVEN
    AND 63/1ØØ":PRINTQ$:PRINTP
    $:PRINTO$:PRINTW$   :REM*182
29Ø AMOUNT$="":INPUT"{2 CRSR DN
    s}";AMOUNT$         :REM*4
3ØØ IFAMOUNT$=""THEN116Ø:REM*93
31Ø IFLEN(AMOUNT$)>4ØTHEN122Ø
                        :REM*248
32Ø ID$="":PRINT"{SHFT CLR}{2 C
    RSR DNs}SOMETIMES A PAYEE R
    EQUIRES AN ACCOUNT{3 SPACEs
    }NUMBER."           :REM*133
33Ø PRINT"{CRSR DN}IF THE PAYEE
     NEEDS SUCH A NUMBER, TYPE{
    2 SPACEs}IT IN NOW AND PRES
    S ";                :REM*112
34Ø PRINT"{CTRL 9}RETURN{CTRL Ø
    }.":PRINT"{CRSR DN}IF NOT,
    THEN PRESS {CTRL 9}RETURN{C
    TRL Ø}.":INPUT"{2 CRSR DNs}
    ";ID$               :REM*1Ø6
35Ø PRINT"{SHFT CLR}{3 CRSR DNs
    }HERE'S WHAT YOU'VE GOT ...
    "                   :REM*17
36Ø PRINT"{2 CRSR DNs}DATE -- {
    CTRL 9}";DATE$;"{CTRL Ø}"
                        :REM*74
37Ø PRINT"{CRSR DN}PAY TO THE O
    RDER OF -- {CTRL 9}";PAY$;"
    {CTRL Ø}"           :REM*181
38Ø PRINT"{CRSR DN}DIGITAL AMOU
    NT -- {CTRL 9}";B$;"{CTRL Ø
    }"                  :REM*124
39Ø PRINT"{CRSR DN}WRITTEN AMOU
    NT -- {CTRL 9}";AMOUNT$;"{C
    TRL Ø}"             :REM*162
4ØØ PRINT"{CRSR DN}ACCOUNT NUMB
    ER -- {CTRL 9}";ID$;"{CTRL
    Ø}"                 :REM*182
41Ø PRINT"{3 CRSR DNs}ANY CHANG
    ES (Y/N)?           :REM*55
42Ø GETA$:IFA$=""THEN42Ø:REM*17
43Ø IFA$="Y"THEN46Ø     :REM*193
44Ø IFA$="N"THENPRINT"{SHFT CLR
    }{3 CRSR DNs}PRINTING .....
    ":GOTO7ØØ           :REM*43
45Ø GOTO42Ø             :REM*13
46Ø PRINT"{SHFT CLR}{CRSR DN}WH
    ICH ONE?":PRINT"{CRSR DN}1.
     DATE":PRINT"{CRSR DN}2. PA
    YEE":PRINT"{CRSR DN}3. DIGI
    T AMOUNT"           :REM*133
47Ø PRINT"{CRSR DN}4. WRITTEN A
    MOUNT":PRINT"{CRSR DN}5. AC
    COUNT NUMBER"       :REM*8Ø
48Ø PRINT"{2 CRSR DNs}PRESS THE
     NUMBER OF THE OPTION YOU N
    EED TO CHANGE."     :REM*197
49Ø GETA$:IFA$=""THEN49Ø
                        :REM*242
5ØØ IFA$="1"THEN56Ø     :REM*32
51Ø IFA$="2"THEN59Ø     :REM*118
52Ø IFA$="3"THEN63Ø     :REM*43
53Ø IFA$="4"THEN66Ø     :REM*121
54Ø IFA$="5"THEN32Ø     :REM*46
55Ø GOTO49Ø             :REM*134
56Ø DATE$="":PRINTZ$:PRINTX$:PR
    INTW$:INPUT"{2 CRSR DNs}";D
    ATE$                :REM*5Ø
57Ø IFLEN(DATE$)<>5THEN124Ø
                        :REM*19
58Ø GOTO35Ø             :REM*15Ø
59Ø PAY$="":PRINTV$:PRINTU$:PRI
    NTW$:INPUT"{2 CRSR DNs}";PA
    Y$                  :REM*5
6ØØ IFPAY$=""THEN128Ø   :REM*156
61Ø IFLEN(PAY$)>4ØTHEN133Ø
                        :REM*26
62Ø GOTO35Ø             :REM*19Ø
63Ø B$="":PRINTS$:PRINTR$:PRINT
    W$:INPUT"{2 CRSR DNs}";B$
                        :REM*23
64Ø IFB$=""THEN134Ø     :REM*33
65Ø GOTO35Ø             :REM*22Ø
66Ø AMOUNT$="":PRINTQ$:PRINTP$:
    PRINTO$:PRINTW$:INPUT"{2 CR
    SR DNs}";AMOUNT$    :REM*176
67Ø IFAMOUNT$=""THEN138Ø:REM*15
68Ø IFLEN(AMOUNT$)>4ØTHEN143Ø
                        :REM*76
69Ø GOTO35Ø              :REM*5
7ØØ OPEN4,4:OPEN6,4,6:OPEN1Ø,4,
    1Ø                  :REM*144
71Ø FORI=1TO1STEP1:PRINT#6,CHR$
    (I)                 :REM*13Ø
72Ø IFID$=""THEN74Ø     :REM*169
73Ø PRINT#4,AA$;"ACCT.# ";ID$
                        :REM*34
74Ø NEXT                :REM*1Ø1
75Ø OPEN3,4             :REM*66
76Ø PRINT#3,TAB(27):PRINT#3:PRI
    NT#3:PRINT#3:PRINT#3,BB$;DA
    TE$;CC$;YR$:PRINT#3   :REM*1
77Ø ZZ=LEN(PAY$):FORZ=1TO(4Ø-ZZ
    ):PAY$=PAY$+" ":NEXTZ
                        :REM*185
78Ø PRINT#3," ";PAY$;"{2 SPACEs
    }";"{3 CRSR LFs}*";B$:PRINT
    #3                  :REM*98
79Ø ZZ=LEN(AMOUNT$):QQ$="":FORZ
    =1TO(4Ø-ZZ):QQ$=QQ$+"-":NEX
    TZ                  :REM*24Ø
8ØØ PRINT#3,AMOUNT$;QQ$:REM*148
81Ø CLOSE1Ø:CLOSE6:CLOSE4:CLOSE
    3                   :REM*231
82Ø PRINT"{SHFT CLR}{CRSR DN}WH
    EN PRINTER HAS FINISHED, RE
    MOVE CHECK."        :REM*2Ø
83Ø PRINT"{2 CRSR DNs}PRESS {CT
    RL 9}SPACE{CTRL Ø} AFTER YO
    U'VE DONE SO"       :REM*227
84Ø GETA$:IFA$=""THEN84Ø:REM*61
85Ø IFA$<>CHR$(32)THEN84Ø
                        :REM*247
86Ø PRINT"{SHFT CLR}{3 CRSR DNs
    }{4 SPACEs}DO YOU WISH TO:"
                        :REM*72
87Ø PRINT"{4 CRSR DNs}";EE$;"{C
    TRL 9}Q{CTRL Ø}UIT":REM*223
88Ø PRINT:PRINTFF$;"OR":REM*167
89Ø PRINT"{CRSR DN}";GG$;"{CTRL
     9}C{CTRL Ø}ONTINUE"
                        :REM*229
9ØØ GETA$:IFA$=""THEN9ØØ:REM*17
91Ø IFA$="Q"THENPRINT"{SHFT CLR
    }{12 CRSR DNs}{5 SPACEs}HAV
    E A NICE DAY.":END  :REM*1Ø
92Ø IFA$="C"THENCLR:GOTO3Ø
                        :REM*144
93Ø PRINT"{SHFT CLR}{6 CRSR DNs
    }SORRY, A DATE IS NECESSARY
     ON EACH CHECK"     :REM*22Ø
94Ø PRINTL$             :REM*76
95Ø GETA$:IFA$=""THEN95Ø
```

*Continued on p.42.*

# Customizing Check It Out

Check It Out is a simple Basic program, so you can easily modify it to work on almost any printer. I wrote the program to work on the MPS 802 printer. If you have an MPS 803, simply replace lines 40, 730 and 780 in Listing 1 with the following:

```
40 CC$=" "
730 PRINT#4,AA$;"ACCT.#";ID$:PRI
    NT#4:PRINT#4:OPEN3,4,7:PRINT
    #3,BB$;DATE$;CC$;YR$;PRINT#3
    ;GOTO770
780 PRINT#3,PAY$;B$
```

If you have any other type of printer, and are having difficulties getting the entries to print in the correct place, first try adjusting the placement of the check. If you can't fix the problem that way, and you have a little Basic programming skill, then you have a few options. If you're getting too much space between the printed lines, examine line 760. The command PRINT#3: prints out a blank line. To reduce the amount of space between the items on the check, you will have to remove the PRINT#3: command in the appropriate place. Try replacing line 760 in Listing 1 with:

```
760 PRINT#3,TAB(27):PRINT#3:PRINT
    #3:PRINT#3,BB$;DATE$;CC$;YR$:
```

If items on the check are printing too far to the right or left, modify the number of spaces across by increasing or decreasing the number of spaces in lines 30, 40 and 50. Experiment until you get the lines the right length.

*—LR*

# Happy Holidays!

*Celebrate your Yuletide season with this festive Santa display for the C-128.*



By KENNETH HOKE

Here's a colorful and festive 40-column, animated display for the 128 featuring Santa and his reindeer that's guaranteed to add a special holiday touch to any den or living room. Type in Listing 1 using *RUN*'s checksum on page 44, save it, and then type RUN.

The animation technique is fairly simple. Five sprites—one for Santa and his sleigh, four for the reindeer—are sent across the screen with the MOVSPR command. To create the illusion of flying, the pointers for the reindeer sprites alternate between sprite definition areas 2 and 3, which hold data for the two poses.

For more information on this technique, see the *Commodore 128 Programmer's Reference Guide* (Bantam Books). Look for it at a library or user's group.

This year, let Santa (and the C-128) add a cheerful touch to your home. From all of us at *RUN*, Happy Holidays! R

*Commercial pilot Ken Hoke has been programming since before Christmas 1986.*

**Listing 1. Happy Holidays program. Also available on the November/December ReRUN disk.**

```
10 REM "HAPPY HOLIDAYS":REM*184
20 A=260:B=270:C=115:D=90:E=250
                        :REM*144
30 COLOR4,1:COLOR0,1:COLOR1,8
                        :REM*82
40 GRAPHIC1,1:WIDTH2    :REM*22
50 CIRCLE1,A,120,3,50,,,,D:PAIN
   T1,A,C               :REM*254
60 CIRCLE1,A,C,40,2,,,,D
                        :REM*123
70 PAINT1,B,C:PAINT1,E,C
                        :REM*247
80 CIRCLE1,A,C,25,3,,,45,D
                        :REM*250
90 PAINT1,E,105:PAINT1,B,125
                        :REM*120
100 CIRCLE1,A,C,25,3,,,315,D
                        :REM*180
110 PAINT1,B,105:PAINT1,E,125
                        :REM*171
120 FOR S=1 TO 100      :REM*168
130 X=INT(RND(1)*319)     :REM*2
140 Y=INT(RND(1)*199)   :REM*115
150 DRAW 1,X,Y:NEXT      :REM*85
160 COLOR1,6:X=2:Y=14   :REM*225
170 READA$:IFA$="-1"THEN250
                        :REM*236
180 B$=MID$(A$,1,20)+MID$(A$,22
    ,20)+MID$(A$,43,20) :REM*82
190 FOR I=1TO30         :REM*107
200 C$=MID$(B$,(I*2)-1,2)
                        :REM*177
210 IFC$="FF"THEN Y=Y+1:X=2:GOT
    O240                :REM*164
220 C=DEC(C$)           :REM*212
230 CHAR1,X,Y,CHR$(C),0:X=X+1
                        :REM*215
240 IFI=30THEN170:ELSE NEXTI
                        :REM*227
250 REM ** STORE SPRITE DATA **
                        :REM*19
260 FOR A=3584 TO 3775 :REM*142
270 READ D$:POKEA,DEC(D$):NEXT
                        :REM*29
280 REM ** POSITION/MOVE SPRITE
    S **                :REM*134
290 X=350:FORS=1TO5     :REM*116
300 MOVSPRS,X,95        :REM*223
310 SPRITE S,1,11,0,0,0,1
                        :REM*205
320 MOVSPR S,90#1       :REM*165
330 X=X+25:NEXTS        :REM*110
340 REM ** ANIMATE SPRITES **
                        :REM*61
350 DO:SLEEP1           :REM*222
360 FOR D=57 TO 58      :REM*116
370 FOR S=8185 TO 8188  :REM*70
380 POKES,D:NEXTS       :REM*202
390 SLEEP1:NEXTD:LOOP   :REM*60
400 REM HAPPY HOLIDAYS DATA
                        :REM*180
410 DATA D5C3C9E0E0E0D5FFCACB*C
    2E0E0E0C2D5C3C9D5C3*C9D5C3C
    9C9E0D5FFE0E0       :REM*179
420 DATA C2E0E0E0C2C2E0C2C2E0*C
    2C2E0C2C2E0C2FFE0E0*C2E0E0E
    0C2ABC3B3ABC3       :REM*66
430 DATA CBABC3CBCAB2CBFFE0E0*C
    2E0E0E0C2C2E0C2C2E0*E0C2E0E
    0E0C2FFE0CADB       :REM*130
440 DATA C3C3C3DBCBE0CACBE0E0*C
    BE0E0E0CBFFE0E0C2E0*E0E0C2D
    5C3C9C9E0E0C9       :REM*218
450 DATA B0C3C9D5C3C9C9E0D5D5*C
    3C9FFE0E0C2E0E0E0C2*C2E0C2C
    2E0E0C2C2E0C2       :REM*74
460 DATA C2E0C2C2E0C2C2E0CBFF*E
    0E0C2E0E0E0C2C2E0C2*C2E0E0C
    2C2E0C2ABC3B3       :REM*215
470 DATA CAB2CBCAC3C9FFD5C9C2*E
    0E0E0C2C2E0C2C2E0E0*C2C2E0C
    2C2E0C2E0C2E0       :REM*226
480 DATA D5C9C2FFCAC3CBE0E0E0*C
    ACAC3CBCAC3CBCAADC3*CBCBE0C
    AE0CAE0CAC3CB       :REM*14
490 DATA -1             :REM*89
500 REM SPRITE DEFINITIONS 1,2
    & 3                 :REM*3
510 DATA 1,,,1,,,,C0,,,F0,,,F0,
    0,80,50,0           :REM*175
520 DATA 80,50,,A0,70,,A8,F0,A0
    ,A8,FF,FF           :REM*107
530 DATA 2A,FA,A0,2A,AA,80,2A,A
    A,80,2A             :REM*144
540 DATA AA,,2A,AA,,2A,A8,,4,4,
    54,44,4,4           :REM*96
550 DATA 55,55,54,,,,,,,0
                        :REM*51
560 DATA 0,5,,,1,40,,,50,,,10,,
    ,14,,,15            :REM*77
570 DATA ,,50,4,57,50,1,57,50,F
    F,FF,FF,1           :REM*234
580 DATA 55,50,,40,10,,40,10,,5
    0,50,0,14           :REM*208
590 DATA 40,,5,40,,15,,,11,,,,,
    ,,,,,,0             :REM*74
600 DATA 0,1,,,5,40,,,50,,,14,,
    0,15,,,10           :REM*113
610 DATA 0,,50,4,57,50,1,57,50,
    FF,FF,FF            :REM*205
620 DATA 1,55,50,,40,10,1,40,14
    ,1,,5,5,0           :REM*213
630 DATA 1,14,,1,,,,,,,,,,,,,,,
    ,0                  :REM*64
```

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# Bombard

*Extra! Extra! Maniac pelts city streets with bombs. Only one person can stop him—YOU!*

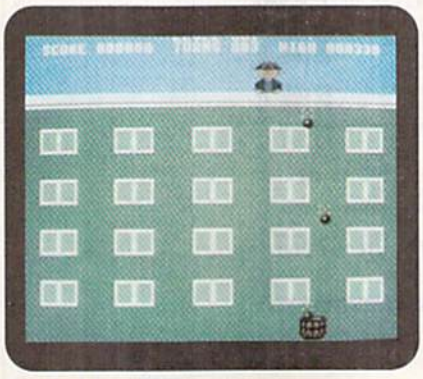


By TONY BRANTNER

A madman equipped with a huge supply of explosives is perched atop a local high-rise, and he's bombing the street below. With only a bucket of water to catch and diffuse the bombs, you are the only one who can save the block from sure destruction.

To play Bombard, have your joystick plugged into port two. Press the firebutton to begin. Position the bucket under each bomb and catch it before it hits the ground. With every level the bomber becomes more proficient; he lights and drops more bombs each level, and he drops them faster. Every bomb you catch earns five times the current level.

When a bomb hits the ground all the other bombs on-screen explode, which, of course, leaves the bomber giggling in delight. Although you begin the game with three turns, you earn an extra turn every 2000 points. The game ends when you have no turns remaining.



**Catch the bombs or the madman will blow up the block in Brantner's latest game.**

To freeze the game, press the SHIFT-LOCK key; press it again to resume. To exit the game and return to Basic, press RUN/STOP.

Type in Bombard from Listing 1, using *RUN*'s checksum on page 44 to catch any typing errors. Save it with the name Bombard.SC. Next, run Bombard.SC to create the file Bombard.ML. To play, load Bombard.ML with the command LOAD "BOMBARD.ML ",8,1 {RETURN} and then type RUN {RETURN}. And please, do it before it's too late! R

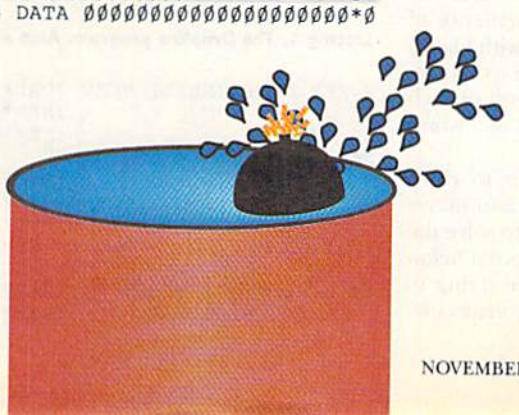
*Tony Brantner can stuff a mean ream of programming into just a page or two of code.*

**Listing 1. Bombard.SC program. Also available on the November/December ReRUN disk. Call 800-824-5499.**

```
Ø REM THIS LIST 1 CREATES (AND
  SHOULD NOT BE CALLED) BOMBARD
  .ML                    :REM*2Ø7
5 OPEN 8,8,8,"BOMBARD.ML,P,W"
                         :REM*58
6 CT=Ø:PRINT"{SHFT CLR}":REM*56
1Ø READ A$:IF A$="-1" THEN CLOS
  E8:PRINT:PRINT"ALL DONE!":EN
  D                      :REM*129
12 PRINT"{HOME}READING LINE "+S
  TR$(CT):CT=CT+1        :REM*141
15 IF LEN(A$)<62 THEN 55
                         :REM*254
2Ø B$=MID$(A$,1,2Ø)+MID$(A$,22,
  2Ø)+MID$(A$,43,2Ø)     :REM*242
25 FOR I=1 TO 3Ø         :REM*181
3Ø C$=MID$(B$,(I*2)-1,2):H$=LEF
  T$(C$,1):L$=RIGHT$(C$,1)
                         :REM*2Ø9
35 H=VAL(H$):IF H$>"9" THEN H=A
  SC(H$)-55              :REM*85
4Ø L=VAL(L$):IF L$>"9" THEN L=A
  SC(L$)-55              :REM*136
45 BY=H*16+L:PRINT#8,CHR$(BY);
                         :REM*67
5Ø NEXT:GOTO 1Ø          :REM*115
55 IF LEN(A$)<21 THEN B$=A$:GOT
  O 7Ø                   :REM*184
6Ø IF LEN(A$)<42 THEN B$=LEFT$(
  A$,2Ø)+RIGHT$(A$,(LEN(A$)-21
  )):GOTO 7Ø             :REM*176
65 B$=LEFT$(A$,2Ø)+MID$(A$,22,2
  Ø)+RIGHT$(A$,LEN(A$)-42)
                         :REM*14Ø
7Ø FOR I=1 TO LEN(B$)/2:REM*221
75 C$=MID$(B$,(I*2)-1,2):H$=LEF
  T$(C$,1):L$=RIGHT$(C$,1)
                         :REM*14Ø
8Ø H=VAL(H$):IF H$>"9" THEN H=A
  SC(H$)-55              :REM*56
85 L=VAL(L$):IF L$>"9" THEN L=A
  SC(L$)-55              :REM*84
9Ø BY=H*16+L:PRINT#8,CHR$(BY);
                         :REM*148
95 NEXT:GOTO 1Ø          :REM*16Ø
1ØØ REM HEX DATA FOR BOMBARD.ML
                         :REM*84
1Ø1 DATA Ø1Ø8ØBØ8ØAØØ9E323Ø36*3
  1ØØØØØAØØØB94CØD99*4Ø3DB94
  CØE994Ø3EB94C          :REM*35
1Ø2 DATA ØF994Ø3FC8DØEBA9ØØ8D*2
  ØDØA9Ø18D21DØAØØØA9*AØ99ØØØ
  499C8Ø4999ØØ5          :REM*71
1Ø3 DATA 9958Ø6992ØØ7A9ØE99ØØ*D
  8A9ØB99C8D8999ØD999*58DA992
  ØDBC8CØC8DØD7          :REM*221
1Ø4 DATA A9F9AØØC2Ø1EABAØ27A9*7
  799C8Ø4A9ØE99C8D8A9*C599FØØ
  4881ØEEA9Ø385          :REM*25Ø
1Ø5 DATA Ø5A9Ø485Ø6A5Ø5ØAØA18*6
  9Ø8AAA5Ø6ØAØAØA1869*Ø2A8182
  ØFØFFA93BAØØD          :REM*228
1Ø6 DATA 2Ø1EABC6Ø61ØEØC6Ø51Ø*D
  8A9ØØ8D17DØ8D1BDØ8D*1DDØ8D2
  6DØA9Ø28D25DØ          :REM*25Ø
1Ø7 DATA A9FF8D1CDØAØØ7B993ØC*9
  927DØ881ØF7A9ØØ8D15*DØA2Ø3A
  ØØA182ØFØFFA9          :REM*2Ø6
1Ø8 DATA 9FAØØC2Ø1EABA9142Ø5A*Ø
  CAØ4FA9AØ9978Ø4881Ø*FAA9ØA2
  Ø5AØCADØØDC29          :REM*49
1Ø9 DATA 1ØDØD6A9Ø185FBA9Ø32Ø*B
  3ØB2ØA8ØBA9AC8D121Ø*8D131ØA
  9ØØ8D1A1Ø8D1B          :REM*23
11Ø DATA 1ØA5FBØAØA1869ØA85FD*2
  ØBFØBA9ØØA8991C1ØC8*DØFA2Ø3
  FØCA9E48D221Ø          :REM*213
111 DATA A9488D231ØA9198D271Ø*2
  Ø6BØCA9FF8D15DØ2ØE1*FFDØØ1Ø
  ØAD8DØ2C9Ø1FØ          :REM*125
112 DATA F9E6Ø42ØCFØA2Ø2EØB2Ø*4
  AØB2ØØCØAEE2A1ØAD2A*1ØC9Ø59
  ØØ8A9ØØ8D2A1Ø          :REM*36
113 DATA 2ØE2Ø9EE281ØAD281ØC9*Ø
```

Run it right: **C-64; joystick in port 2**

```
    E900BA5FB8D2810204F*0A2084
    A206B0CA5FD0D          :REM*211
114 DATA 2410D019A005B91C10D0*1
    2881 0F820 0B0CA4FBC8*C00AB00
    284FB4C0E09A0          :REM*158
115 DATA 05B91C10C9EBB0068810*F
    64C3D0920E40AA9C08D*15D0A91
    08505A0F6A505          :REM*55
116 DATA 4A9001888CFF07A95052 0*5
    A0CC605D0ECC6FCA5FC*4820B30
    B68F0034C0E09          :REM*206
117 DATA 4CC308AD00DC4A4A2903*A
    818AD12107 98B0CAAAD*1A10798
    F0CD007E0199 0         :REM*29
118 DATA 0D4C054 0AE042B0068E12*1
    08D1A106 0A005B91C10*C9E2D03
    618AD12106909          :REM*236
119 DATA 8502AD1A1069 0850338*A
    502F90C10AAA503F914*10D019E
    015B015A9018D          :REM*141
120 DATA 2410A900991C10A5FB0A*0
    A1865FBAA4C590B8810*C060AD1
    BD4F01EAC2910          :REM*33
121 DATA 18AD13107 98C0CAAAD1B*1
    0799 0CD007E01A900 7*4C7D0AE
    0409 00BAD2910         :REM*226
122 DATA 4901290 18D2910608E13*1
    08D1B106 0EE2610AD26*104A904
    1EE2710A205BD          :REM*159
123 DATA 1C10D031AD2710C9419 0*2
    DA5FB0A0A8D2710A5FD*F022C6F
    DAD13109D0C10          :REM*186
124 DATA AD1B109D141 0A9559D1C*1
    0A9FA8D25108A482 0F2*0B68AAF
    E1C10CA10C460          :REM*24
125 DATA A005A5044A4A4A4A4A29*0
    11869F799F8 07881 0EE*602 03F0
    CA9198D05D4A9          :REM*129
126 DATA 0C8D06D4A9 0585 05A900*8
    506A28 08E04D4E88E04*D4A5064
    A4A4A4A4A4AA8          :REM*57
127 DATA B99B0CA00599F8 07881 0*F
    AA2012062 0CA5064A4A*4A29 0F8
    D01D4E606D0D9          :REM*130
128 DATA C605D0D560A0FFAD2410*F
    011EE2410482 0D5 0B68*4A4A4A4
    A4A4A09FCA88C          :REM*4
129 DATA FE0760A0F5AD2510F004*C
    8CE2510 8CFF0760AD32*0485 02A
    00538B9300469          :REM*92
130 DATA 00C9BA9002A9B0993004*8
    810EFCAD0E9AD3204C5*02F00E4
    AB00BA4FCC8C0          :REM*41
131 DATA 64B004982 0B30BA000B9*3
    004D948049013D006C8*C0069 0F
    160A005B93004          :REM*54
132 DATA 9948 04881 0F760A005A9*B
    0993004881 0FA6085FC*20C7 0B8
    C3F048D4 00460         :REM*156
133 DATA A5FB09B08D1804 60A0B0*C
    90A900 5E90AC8D0F709*B0602AA2
    910D0178A2920          :REM*64
134 DATA 1869 0C8D01D4A9028D05*D
    4A2108E04D4E88E04D4*60A9098
    D08D4A9088D0C          :REM*91
135 DATA D4A9008D0DD4A2208E0B*D
    4E88E0BD4602 03F0CA9*1E205A0
    CA9F08D06D4A9          :REM*76
136 DATA 118D04D4A9048505A505*8
    506A506 0A0A0A0A8D01*D4A9022
    05A0CC606D0EE          :REM*5
137 DATA E605A505C90B90E2A017*A
    900990 0D4881 0FA8C0E*D48C0FD
    4A9808D12D4A9          :REM*27
138 DATA 8F8D18D4601865A2C5A2*D
    0FC60A08C88D0FDCAD0*F860A20
    78A0AA8BD1C10          :REM*90
139 DATA 9901D0BD0C1099 00D0BD*1
    4104A2602CA10E8A502*8D10D06
    0000 1FF000000         :REM*247
140 DATA FF000707070707070E0A*F
    9FAFBFA9ABBC412B592*A112B7A
    192BBDFA912A1          :REM*197
141 DATA 92BBC412B592A1C412A1*9
    2BBC412B592BB12B7A1*0D12202
    02020505 24553         :REM*201
142 DATA 53209 2BE12A2A192A112*A
    2A192BE12DFA9A192BE*12A2A19
    2BE12205A192BE         :REM*133
143 DATA 1220A192BE12A2A14649*5
    2450D00088E13111D1D*129A534
    34F52452030 30         :REM*71
144 DATA 3030303020 20914C4556*4
    54C2030303031119D9D9D*9D9D9D9
    D9D9D5455524E          :REM*54
145 DATA 5320303033202048494 7*4
    8203030303030300D00*9812CFD
    0CFD0119D9D9D          :REM*247
146 DATA 9DCCBACCBA0D0005540*0
    1555003FFF00F1D3C3F*FFFF1A9
    9A90695A4066A          :REM*208
147 DATA 64 0695A401AA90006A40*0
    0D5C003C0F00FFFFC3F*C0FF3FF
    FFF3FC0FF3FFF          :REM*83
148 DATA FF19C0D91A7F690540 54*8
    6000000005540 01555 0*03FFF00
    F1D3C3FFFFF1A          :REM*77
149 DATA 99A90695A4066A640695*A
    401AA900 36A700FD5FC*3FFFFF3
    FC0FF3FFFFF3F          :REM*194
150 DATA C0FF19FFD91A4069057F*5
    4000000860202000000*0000200
    000100002120 0         :REM*103
151 DATA 0010000003C0000EF0000*E
    F0000FF0000FF00003C*0000000
    0000000000000          :REM*90
152 DATA 0000000000000000000*0
    0000000000000026 0*0000008
    80000200000 98         :REM*227
153 DATA 0000100000100000 3C0 0*0
    0EF0000EF0000FF0000*FF00003
    C0000000000            :REM*181
154 DATA 0000000000000000000*0
    0000000000000000000*0000260
    000000000000           :REM*151
155 DATA 340000F7C003E4C001D5*B
    001597 0D6A7C0F595C*0395DC0
    3D5B000 5FC000         :REM*187
156 DATA 3F0000000000000000000*0
    0000000000000000000*0000000
    00000260000 0          :REM*12
157 DATA 0004000017 0000E7000F*D
    9F005EA703666 9C3699*9C35A65
    43D6A640F5974          :REM*18
158 DATA 0195F0015FC0007C0000*0
    0000000000000000000*0000000
    0000000000             :REM*142
159 DATA 260014000057 0036FC0*0
    FA6501 7FA5419A66436*AA97166
    A6F15AA9C09A6          :REM*84
160 DATA 9506 AD70D59E70F557 0*0
    03C4000000000000000*0000000
    0000000000             :REM*30
161 DATA 00000000260000000000*0
    0000000000000000000*0202000B
    FBBF8FAAABCFF          :REM*72
162 DATA EFFCFEFFBCDD75DCDD75*D
    CFD75FCFFFFFCDFFFDC*DD75DCD
    D75DCF7777C37          :REM*50
163 DATA 7770 3FFFF00FFFC00000*0
    0000000000000008000*2000200
    0820 20820EBAE0        :REM*82
164 DATA FAAABCFEFEFCFFEFFCD9*7
    5ECDD75DCFD75FCFFFF*FCDFFFD
    CDD75DCDD75DC          :REM*172
165 DATA F7777C37777 03FFFF00F*F
    FC0000000000000008*0200800
    0080000000008          :REM*162
166 DATA 003BFFF8FAAABCBFEFF8*F
    BFFBCDD65DCDD75DCED*75F8FFF
    FFCDFFFDCDD75          :REM*185
167 DATA DCDD75DCF7777C37777 0*3
    FFFF00FFFC0000000000*0000000
    0000000000000          :REM*189
168 DATA 0000000000 3FFFF0FAAA*B
    CFFFFFCFFFFFCDD75DC*DD75DCF
    D75FCFFFFFCDF          :REM*24
169 DATA FFDCDD75DCDD75DCF777*7
    C37777 03FFFF00FFFC0*0000000
    0000000000000          :REM*61
170 DATA 0000000000000000000*0
    0000000000000000000*0000
                           :REM*37
171 DATA -1                :REM*25 ■
```



# 128 Mode

*This debut computer version of the challenging word game, Droplines, proves that "All things come to those who wait."*

By MARK JORDAN

SEVERAL YEARS AGO a colleague of mine showed me some word games she was using in the classroom. (All English teachers love word games.) Until then, I *thought* I was familiar with all such games.

"What're these?" I said.

"*You* don't know what droplines are?"

I studied the paper. They looked sort of like *Wheel of Fortune* grids, sort of like crossword puzzles. "Oh...yes, of course," I said, "...droplines."

She rolled her eyes. "Here, I'll show you how they work." Within minutes, I was hooked.

Not only do they have great potential as a tool for helping kids memorize famous quotes, but droplines are addictively fun. I don't know why it took me so long to realize they are the ideal computer game, but they are, and, if you type in Droplines, you'll have what I believe is the first computerized version of this game.

Type in Listing 1 using the Checksum on page 44 and save it. The program runs in 80-column mode (though it has a unique double-width output you'll read about below) so make sure you've got your 40/80 Display key pressed down. If you want to try solving a dropline right away, type in Listing 2 also (you don't have to save it if you don't want to). It will create a few puzzles, which I've encoded so you can't figure them out while you're typing them. When you load and run the main program, it will look for a "puzzles" file (created by Listing 2) and will present you with the main menu, which has three options: Load a puzzle, Create one, or Quit. Select L for load.

Playing the game is almost foolproof, if you know how droplines work. Here's the skinny. A dropline is a puzzle that asks you to figure out a quotation (a sentence of any kind). You're given a grid with blanks (filled-in spaces) indicating the spaces between the words. Note: The end of each line does *not* indicate the end of a word, only the blanks do.

The quotes read from left to right across the grid over a series of four or five rows. All the letters you need to solve the puzzle are given in scrambled order below each column. So, when you're trying to figure out what letter might go in any given space, you'll read across the grid to find out how many letters are in the word, and below the grid to find out which ones might fit.

In the sample printed here the first square is a space, the next one a blank. This puzzle must start with a one-letter word. The choices found below column 1 are Q, I, or S. Obviously, Q and S aren't one-letter words, so it must be I. The next word is a four-letter word (a comma follows); but what can it be? It starts with either an R, C, W, or E. If we look at the next three columns of letters, we can see many possibilities: *rope, cope, Rome, came* are all there. Not ready to hazard a guess? Then glance at the next word; it's a one-letter jobbie also (must be I again). Let's read what we've got: I...I...Hmm, this is getting interesting.

Don't get it yet? Don't dismay. Droplines can be quite challenging, but at least they're more fun to work on the computer. For starters, you can cursor nicely over the blanks, skipping punctuation, and jump from space to space. Plus, you can't type an errant letter (that is, one that is not available as a choice in whatever column you're on). When you do pick a letter, the corresponding letter from below the grid will darken to indicate you've used it once. If you try to use it again in a different space in that column, you won't be able to. The titlebar will remind you of your options:

**F1** Check your answer.

**F3** Solve the puzzle ("I give up").

**F5** Print it. Note: Line 6040 sends the printer codes to make my Star NX-10C change its spacing. If your printer gives you trouble, REM out this line or adjust it according to your printer manual.

**F7** Get a hint (it fills in the correct answer for the space the cursor is on).

**ESCape** Go back to the main menu.

**Back-arrow** (←) The double-width option mentioned above. A little-used feature of the video chip that runs the 80-column screen is its ability to double pixel width. This chip also allows you to change your screen's memory very easily. Putting these two features together gives you the ability to work all your puzzles in a scrolling, double-width screen. You can toggle back and forth between the two simply by pressing the back-arrow key. You'll definitely want to try this out.

You can also create quotes for use in future puzzles. Just choose Create from the main menu. Create mode uses a simple input statement, so don't expect any luxuries here; just type and press RETURN. You can type up to 150 characters so don't worry when you get to the end of the line. Also, punctuation *is* allowed. The program allows up to 500 quotes, so grab a copy of *Bartlett's Familiar Quotations* and add quotes any time you play. If you plan on solving many of these yourself, type enough so you won't recognize them. Or better yet, call in someone else to type some in for you. Just tell them to finish each one with a RETURN.

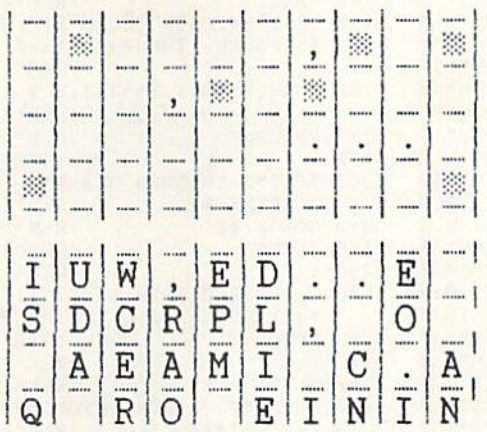
You don't have to be an English teacher to enjoy Droplines, but using the program will definitely make you more quote-wise, and "A word to the wise is sufficient." You can quote me on that. R

*128 Mode columnist Mark Jordan is living proof that hobby programming can be creative and lots of fun.*

**Listing 1. The Dropline program. Also available on ReRUN. (Call 800-824-5499)**

```
Ø REM DROPLINE BY MARK JORDAN
                              :REM*148
1Ø SCNCLR                     :REM*242
2Ø GOSUB3ØØ:REM VARIABLES
                              :REM*112
3Ø GOSUB8ØØ:IFNP<2THENGOSUB7ØØØ
                              :REM*152
4Ø :                           :REM*98
5Ø DO                          :REM*28
6Ø SCNCLR:PRINTCHR$(14):GRAPHIC
   5:COLOR6,1:FAST            :REM*217
7Ø CHAR,3Ø,2,"{CTRL 6}---{2 SPA
   CEs}{SHFT L}OAD {SHFT P}UZZL
   E ---",1                    :REM*147
8Ø CHAR,3Ø,3,"{COMD 6}--- {SHFT
    C}REATE {SHFT P}UZZLE---",1
                               :REM*168
9Ø CHAR,3Ø,4,"{COMD 7}---{5 SPA
   CEs}{SHFT Q}UIT{5 SPACEs}---
   ",1                         :REM*2Ø5
1ØØ CHAR,3Ø,5,"{CTRL 7} ({SHFT
    P}RESS {SHFT L}, {SHFT C},
```

# PUZZLE 4




**Droplines challenge your deductive skills and your memory for quotes.**

```
    OR {SHFT Q}) ",1    :REM*215
11Ø :                   :REM*168
12Ø GETKEYSV$:IFINSTR("LCQ",SV$
    )=ØTHEN12Ø          :REM*157
13Ø IFSV$="L"THENGOSUB1ØØØ:EF=1
                        :REM*197
14Ø IFSV$="C"THENGOSUB7ØØØ
                        :REM*151
15Ø IFSV$="Q"THENEF=2:EXIT
                        :REM*88
16Ø LOOP                :REM*141
17Ø :                   :REM*228
18Ø IFS1=63THENGOSUB51Ø :REM*7Ø
19Ø PRINT"{2 HOMEs}{SHFT CLR}"
                        :REM*2Ø6
2ØØ END                 :REM*73
21Ø :                   :REM*13
3ØØ WR=52684:RR=52698:CH=52Ø56:
    DP=52276            :REM*155
31Ø E$=CHR$(27):CR$=CHR$(13):UC
    $=CHR$(142):LC$=CHR$(14)
                        :REM*178
32Ø P$="ABCDEFGHIJKLMNOPQRSTUVW
    XYZ"+CHR$(13)+",;:-+.?!/'"
                        :REM*245
324 FORT=1TO7STEP2:A$=CHR$(132+
    T):M$=M$+A$:KEYT,A$:NEXT
                        :REM*92
326 P$=P$+M$+" {LEFT ARROW}{CRS
    R RT}{CRSR LF}{CRSR UP}{CRS
    R DN}"+E$+CHR$(34)+"1234567
    89Ø()"              :REM*254
33Ø DQ$="{COMD 4}{SHFT D} R O P
     L I N E - {SHFT P}UZZLE #"
                        :REM*35
34Ø TB$="{CTRL 4}{2 SPACEs}{SHF
    T F}1={SHFT C}HECK {COMD 4}
     {SHFT F}3={SHFT S}OLVE {CT
    RL 4} {SHFT F}5={SHFT P}RIN
    T {COMD 4} {SHFT F}7={SHFT
    H}INT "             :REM*95
35Ø TC$="{CTRL 4} {SHFT E}SCAPE
     TO EXIT{6 SPACEs}{LEFT ARR
    OW} TOGGLES SCREEN{2 SPACEs
    }"                  :REM*2Ø9
36Ø BT$="{COMD A}{SHFT C}":BB$=
    "{COMD Z}{SHFT C}" :REM*1Ø5
37Ø FORT=1TO2Ø:BX$=BX$+"{SHFT B
    } {SHFT B} ":BD$=BD$+"{SHFT
     B}{SHFT *}{SHFT B}{SHFT *}
    ":BT$=BT$+"{COMD R}{SHFT C}
    {COMD R}{SHFT C}":BB$=BB$+"
    {COMD E}{SHFT C}{COMD E}{SH
    FT C}":P1$=P1$+"{4 COMD @s}
    ":P2$=P2$+"{4 COMD Ts}":SP$
    =SP$+"{4 SPACEs}":NEXT
                        :REM*1Ø1
38Ø SS$=LEFT$(SP$,78)   :REM*77
385 FORT=1TO8:A$=CHR$(132+T):KE
    YT,A$:P$=P$+A$:NEXT:REM*177
39Ø DIM D$(4Ø,5),D(4Ø,5),P$(5ØØ
    )                   :REM*2Ø3
4ØØ RETURN              :REM*28
41Ø :                   :REM*213
5ØØ ZZ=1                :REM*217
51Ø IFS1=63THEN S1=126:S2=8Ø:S3
    =1Ø2:S4=71:S5=12Ø:S6=Ø:SX=Ø
    :GOSUB73Ø:GOTO53Ø   :REM*27
52Ø S1=63:S2=4Ø:S3=53:S4=87:S5=
    137:S6=4Ø           :REM*23
53Ø SYS WR,S1,Ø:SYS WR,S2,1:SYS
     WR,S3,2            :REM*214
54Ø SYS WR,S4,25:SYS WR,S5,22:S
    YS WR,S6,27         :REM*133
55Ø IFZZ=ØTHEN64Ø       :REM*2Ø7
56Ø :                   :REM*1Ø4
6ØØ FORT=ØTO1:CHAR,Ø,T,"{COMD 4
    }"+SP$,1:NEXT       :REM*238
61Ø CHAR,S2/2-13,Ø,LC$+DR$,1
                        :REM*43
62Ø CHAR,S2/2-2Ø,1,LC$+TB$,1
                        :REM*29
63Ø CHAR,Ø,24,SS$:CHAR,S2/2-2Ø,
    24,LC$+TC$+UC$      :REM*98
64Ø ZZ=Ø:RETURN         :REM*2Ø8
65Ø :                   :REM*198
7ØØ IFS1=126 OR NC<19 THEN RETU
    RN                  :REM*33
71Ø IFSX>39THENSX=39    :REM*1Ø
72Ø IFSX<ØTHENSX=Ø      :REM*2Ø7
73Ø SYSWR,SX,13:SYSWR,SX,21
                        :REM*16
74Ø RETURN              :REM*113
75Ø :                   :REM*43
8ØØ IFEF=1THENPRINTSTR$(NP):GOT
    O9ØØ                :REM*24Ø
81Ø DOPEN#2,"PUZZLES"   :REM*43
82Ø NP=Ø                :REM*254
83Ø DO UNTIL ST         :REM*98
84Ø NP=NP+1:INPUT#2,P$(NP)
                        :REM*238
85Ø LOOP                :REM*58
86Ø DCLOSE:IFDS THEN NP=Ø:DCLEA
    R                   :REM*31
87Ø RETURN              :REM*247
88Ø :                   :REM*169
9ØØ SCNCLR              :REM*1Ø4
91Ø PZ=Ø:CHAR,Ø,1,LC$+"{COMD 8}
    {SHFT W}HICH PUZZLE (1 -"+S
    TR$(NP)+")"         :REM*157
92Ø DO UNTIL PZ>Ø AND PZ<NP+1
                        :REM*114
93Ø CHAR,Ø,2,""         :REM*16
94Ø INPUTPZ$:PZ=VAL(PZ$)
                        :REM*139
95Ø LOOP                :REM*166
96Ø DR$=DQ$+STR$(PZ)    :REM*176
97Ø RETURN              :REM*92
98Ø :                   :REM*1Ø
99Ø REM PLAY GAME       :REM*232
1ØØØ GOSUB9ØØ:GOSUB2ØØØ:IFS2=4Ø
    THENGOSUB51Ø        :REM*5Ø
1Ø1Ø RETURN             :REM*132
1Ø2Ø :                  :REM*5Ø
2ØØØ SCNCLR:PU$=P$(PZ):LE=LEN(P
    U$)                 :REM*95
2Ø1Ø NR=5:DV=INT(LE/NR):IFDV<1Ø
    THENNR=4:DV=INT(LE/NR)
                        :REM*126
2Ø2Ø S1=63:IFDV<19THENS1=126
                        :REM*45
2Ø3Ø GOSUB5ØØ           :REM*63
2Ø4Ø MC=INT(LE/NR):NC=MC+1:MR=N
    R-1                 :REM*55
2Ø5Ø R=NC*NR-LE:TB=R+LE:REM*224
2Ø6Ø R1=INT(R/2):LR=R-R1:REM*39
2Ø7Ø :                  :REM*88
2Ø8Ø B1$=LEFT$(BT$,NC*2)+"{COMD
     S}"                :REM*115
2Ø9Ø B2$=LEFT$(BB$,NC*2)+"{COMD
     X}"                :REM*141
21ØØ B3$=LEFT$(BX$,NC*2+1)
                        :REM*29
211Ø B4$=LEFT$(BD$,NC*2+1)
                        :REM*17Ø
212Ø :                  :REM*138
213Ø PRINT"{HOME}{COMD 3}{2 CRS
    R DNs}"UC$B1$       :REM*2Ø8
214Ø FORT=1TOMR:PRINTB3$:PRINTB
    4$:NEXT             :REM*146
215Ø PRINTB3$:PRINTB2$  :REM*18
216Ø :                  :REM*162
217Ø PU$=LEFT$("{5 SPACEs}",R1)
    +PU$+"{5 SPACEs}" :REM*2Ø7
218Ø GRAPHICØ:PRINT"{SHFT CLR}"
    PU$:GRAPHIC5        :REM*114
219Ø FORT=ØTO5:FORI=ØTOMC:D$(I,
    T)="":D(I,T)=Ø:NEXT:NEXT
                        :REM*154
22ØØ :                  :REM*218
221Ø FORT=ØTOMR:FORI=ØTOMC:X=I*
    2+1:Y=T*2+3         :REM*218
```

```
222Ø C$=MID$(PU$,T*NC+I+1,1)
                        :REM*119
223Ø RV=Ø:IFC$=" "THENRV=1
                        :REM*237
224Ø P=INSTR(P$,C$):IFP>26 THEN
     CHAR,X,Y,"{CTRL 5}"+C$+"{
     COMD 8}",RV        :REM*11Ø
225Ø R=RND(1)*NR:IFD$(I,R)<>""T
     HEN225Ø            :REM*157
226Ø D$(I,R)=C$         :REM*46
227Ø NEXT:NEXT:PRINTCR$ :REM*59
228Ø :                  :REM*43
229Ø FORT=ØTOMR:FORI=ØTOMC
                        :REM*246
23ØØ PRINT"{CTRL 5}{SHFT B}{COM
     D 7}"D$(I,T);:NEXT:PRINT:N
     EXT                :REM*49
231Ø :                  :REM*73
4ØØØ EX$="":FL=Ø:X1=R1+1:Y1=Ø:P
     OKE2Ø8,1:POKE842,157:C1=32
     :TM=TI:X2=1:CU=Ø   :REM*39
4Ø1Ø DO                 :REM*133
4Ø2Ø GETKEYA$:P=INSTR(P$,A$):IF
     P=ØTHEN4Ø2Ø        :REM*67
4Ø3Ø IFP<38 THEN 4Ø6Ø   :REM*157
4Ø4Ø ONP-37 GOSUB54ØØ,53ØØ,6ØØØ
     ,57ØØ,58ØØ,5ØØ,581Ø,582Ø,5
     83Ø,584Ø,5ØØØ      :REM*149
4Ø5Ø IFFL THEN EXIT     :REM*19
4Ø6Ø IFP<27 THEN X2=1:GOSUB51ØØ
     :C1=P              :REM*164
4Ø7Ø X1=X1+X2:IFX1>MC THENX1=Ø:
     IFA$<>"{CRSR RT}"THEN Y2=1
     :GOTO4Ø9Ø          :REM*77
4Ø8Ø Y2=Y3              :REM*51
4Ø9Ø IFX1<Ø THEN X1=MC  :REM*17Ø
41ØØ Y1=Y1+Y2:IFY1>MR THEN Y1=Ø
                        :REM*227
411Ø IFY1<Ø THEN Y1=MR  :REM*111
412Ø SYS DP,C1,CO:CO=14 :REM*48
413Ø CHAR,1+X1*2,3+Y1*2,"":SYS
     CH:RREG C1         :REM*16Ø
414Ø IFS1=63 THEN GOSUB52ØØ
                        :REM*58
415Ø IF C1>32 THEN CO=11:Y2=Ø:G
     OTO4Ø7Ø            :REM*136
416Ø SYS DP,C1,15+64    :REM*95
417Ø X2=Ø:Y2=Ø:Y3=Y2    :REM*58
418Ø LOOP:SCNCLR        :REM*12Ø
419Ø RETURN             :REM*252
42ØØ :                  :REM*178
5ØØØ CHAR,S2/2-9,2Ø,LC$+"{COMD
     6}{SHFT A}RE YOU SURE?{2 S
     PACEs}{SHFT Y}/{SHFT N}{CO
     MD 8}"+UC$         :REM*99
5Ø1Ø GETKEYEX$:CHAR,Ø,2Ø,SS$
                        :REM*162
5Ø2Ø A$=" ":P=Ø:IFEX$="Y"THENFL
     =1                 :REM*147
5Ø3Ø RETURN             :REM*32
5Ø4Ø :                  :REM*249
51ØØ HI=1:HJ=Ø:CK=C1+64:CK$="{C
     OMD 7}"            :REM*193
511Ø FORH=ØTOHI:HH=(H+1)AND1
                        :REM*178
512Ø FORG=ØTOMR:IF ASC(D$(X1,G)
     )<>CK THEN514Ø     :REM*82
513Ø IFD(X1,G)=HH THEN D(X1,G)=
     H:CHAR,X1*2+1,NR*2+G+3,UC$
     +CK$+D$(X1,G):G=MR+5
                        :REM*61
514Ø NEXT               :REM*13Ø
515Ø CK=P+64:CK$="{COMD 5}":NEX
     T:IFG=MR+1THENP=32:X2=Ø
                        :REM*255
516Ø CHAR,X1*2+1,Y1*2+3,UC$
                        :REM*226
517Ø RETURN             :REM*212
518Ø :                  :REM*98
52ØØ IFX1*2>19 THEN SX=X1*2-19:
     ELSE SX=Ø          :REM*143
521Ø GOSUB7ØØ           :REM*179
522Ø RETURN             :REM*23Ø
523Ø :                  :REM*188
53ØØ GOSUB5ØØØ:P=39:A$="3":IFEX
     $="Y"THEN54ØØ      :REM*28
531Ø RETURN             :REM*89
532Ø :                  :REM*23
54ØØ FL=Ø:XX=Ø          :REM*131
541Ø FORT=ØTOMR:FORI=ØTOMC:U=I*
     2+1:V=T*2+3        :REM*212
542Ø CHAR,U,V,"":SYS CH:RREG A
                        :REM*235
543Ø IFA<27 THEN CHAR,U,V,"{CTR
     L 2} {COMD 8}{CRSR LF}",1
                        :REM*192
544Ø IFA>32 THEN 549Ø   :REM*33
545Ø AA=PEEK(1Ø24+XX)   :REM*92
546Ø IFA$="3"THEN SYS DP,AA,CO:
     GOTO549Ø           :REM*1Ø6
547Ø SYS DP,A,CO        :REM*16Ø
548Ø IFA<>AA THEN CHAR,1+X1*2,3
     +Y1*2,"":GOTO55ØØ  :REM*241
549Ø XX=XX+1:NEXT:NEXT:IFP<>39T
     HEN GOSUB56ØØ      :REM*5
55ØØ RETURN             :REM*28
551Ø :                  :REM*213
56ØØ CHAR,S2/2-15,21,LC$+"{SHFT
      Y}OU SOLVED IT IN "
                        :REM*46
561Ø TM=(TI-TM)/36ØØ:PRINTUSING
     "##.## MINUTES";TM:REM*143
562Ø CHAR,S2/2-5,22,LC$+"WITH"+
     STR$(CU)+" CLUES":SLEEP1
                        :REM*31
563Ø CHAR,S2/2-13,19,LC$+"{COMD
      6}{SHFT P}RESS ANY KEY TO
     CONTINUE{COMD 8}"+UC$
                        :REM*2Ø6
564Ø FL=1:GETKEYXX$     :REM*155
565Ø RETURN             :REM*182
566Ø :                  :REM*64
57ØØ P=PEEK(1Ø24+X1+Y1*NC):CU=C
     U+1:RETURN         :REM*89
571Ø :                  :REM*158
58ØØ P=Ø:RETURN         :REM*134
581Ø X2=1:RETURN        :REM*16Ø
582Ø X2=-1:RETURN       :REM*79
583Ø Y2=-1:Y3=Y2:RETURN :REM*85
584Ø Y2=1:Y3=Y2:RETURN  :REM*253
585Ø :                  :REM*3
6ØØØ CHAR,S2/2-15,19,LC$+"{COMD
      6}{SHFT P}RINT PUZZLE OR
     SOLUTION?{2 SPACEs}{SHFT P
     }/{SHFT S}"        :REM*4
6Ø1Ø CHAR,S2/2-9,2Ø,LC$+"{COMD
     5}({SHFT T}URN ON PRINTER)
     {COMD 8}"+UC$      :REM*2Ø7
6Ø2Ø GETKEYPS$          :REM*26
6Ø3Ø OPEN4,4:Q=Ø        :REM*1Ø8
6Ø4Ø PRINT#4,E$CHR$(51)CHR$(21)
                        :REM*154
6Ø5Ø PRINT#4,"PUZZLE"PZ:PRINT#4
     :PRINT#4,B4$       :REM*147
6Ø6Ø FORT=Ø TO MR:PRINT#4,"{SHF
     T B}";             :REM*252
6Ø7Ø FORI=ØTOMC:Q=Q+1   :REM*63
6Ø8Ø J$=" ":I$=MID$(PU$,Q,1)
                        :REM*173
6Ø9Ø IFPS$="S"ORASC(I$)<65THENJ
     $=I$               :REM*179
61ØØ IF I$=" "THEN J$="{COMD +}
     "                  :REM*4
611Ø PRINT#4,J$"{SHFT B}";
                        :REM*95
612Ø NEXT:PRINT#4       :REM*1Ø9
613Ø PRINT#4,B4$        :REM*7Ø
614Ø NEXT:PRINT#4       :REM*145
615Ø FORT=Ø TO MR:PRINT#4,B4$:F
     ORI=Ø TO MC        :REM*6Ø
616Ø PRINT#4,"{SHFT B}";D$(I,T)
     ;                  :REM*89
617Ø NEXT:PRINT#4:NEXT  :REM*2Ø1
618Ø CLOSE4             :REM*53
619Ø CHAR,Ø,19,SS$:CHAR,Ø,2Ø,SS
     $                  :REM*45
62ØØ RETURN             :REM*222
621Ø :                  :REM*1ØØ
7ØØØ PRINT"{SHFT CLR}{CTRL 6}{S
     HFT T}YPE PHRASES, {SHFT E
     }NTER EMPTY PHRASE TO EXIT
     {CTRL 2}"          :REM*172
7Ø1Ø TF=NP              :REM*1
7Ø2Ø DO:POKE842,34:POKE2Ø8,1
                        :REM*65
7Ø3Ø PRINT"{HOME}{2 CRSR DNs}"E
     $"@";              :REM*2ØØ
7Ø4Ø INPUT"{SHFT P}HRASE: ";PP$
     :IFPP$=""THENEXIT :REM*13Ø
7Ø5Ø IFLEN(PP$)<3ØTHENPRINT"{SH
     FT T}OO SHORT, MIN. 3Ø CHA
     R":SLEEP2:GOTO71ØØ:REM*189
7Ø6Ø FORT=1TOLEN(PP$):A=ASC(MID
     $(PP$,T,1))        :REM*1Ø5
7Ø7Ø IFA>192THENPP$=LEFT$(PP$,T
     -1)+CHR$(A-128)+MID$(PP$,T
     +1)                :REM*52
7Ø8Ø NEXT                :REM*54
7Ø9Ø NP=NP+1:P$(NP)=PP$:REM*13Ø
71ØØ LOOP               :REM*18Ø
711Ø APPEND#2,"PUZZLES":REM*229
712Ø IFDSTHEN DCLEAR:DOPEN#2,"P
     UZZLES",W          :REM*235
713Ø FORT=TF+1TONP:PRINT#2,CHR$
     (34);P$(T):NEXT    :REM*18Ø
714Ø DCLOSE             :REM*29
715Ø RETURN             :REM*96
```

**Listing 2. Sample puzzles for Dropline.**

```
1Ø DOPEN#2,"PUZZLES",W  :REM*6Ø
2Ø FORT=1TO2:B$="":READA$
                        :REM*225
3Ø FORI=1TOLEN(A$)      :REM*222
4Ø A=ASC(MID$(A$,I,1)):IFA<65TH
   EN A=A+1             :REM*25Ø
5Ø B$=B$+CHR$(A-1)      :REM*37
6Ø NEXT:PRINT#2,CHR$(34);B$:NEX
   T                    :REM*132
7Ø DCLOSE               :REM*99
8Ø DATA "BTL OPU XIBU ZPVS DPVO
   USZ DBO EP GPS ZPV, BTL XIBU
    ZPV DBO EP GPS ZPVS DPVOUSZ
   --KPIO LFOOFEZ"      :REM*158
9Ø DATA "PVU, PVU, CSJFG DBOEMF
   , MJGF'T CVU B XBMLJOH TIBEP
   X, B QPPS QMBZFS UIBU TUSVUT
    BOE GSFUT IJT IPVS VQPO UIF
    TUBHF BOE UIFO JT IFBSE OP
   NPSF."               :REM*192
```

# COMMODORE CLINIC

*RUN Script Plus 128 and 1750 REU incompatibility, the Super Expander Cartridge and sprites, and 1541 drive alignment.*

By TIM WALSH

**Q** *In 1987,* RUN *released the Productivity Pak III disk, which offered numerous utilities and applications. The word processor RUN Script Plus, for the C-64 and C-128 was included among the Productivity Pak III programs.*

*The C-64 version of RUN Script Plus works nicely with a RAM expansion unit, yet the C-128 version doesn't work at all with an REU. To your credit, this possibility of incompatibility was mentioned in the documentation.*

*My question is as follows: Will RUN Script Plus for the C-128 ever be upgraded to work with the 1750 REU?*

—JOHN C. TOBIN
RICHLAND, WA

**A** When we were developing RUN Script Plus over five years ago, I worked closely with Robert Rockefeller, who designed all of the RUN Script programs. I recall two problems occurred getting the 1750 REU to work with RUN Script Plus.

One problem was that the program that Commodore provided with the 1750 REU that configured the device as a RAM drive used the same memory locations as RUN Script, and that made it impractical, if not impossible to use. The second problem was that the developer's version of a RAM disk configuration program worked with RUN Script 128, yet it was not available to consumers at that time.

Over time, the developer's RAM disk became available on the nets, such as QuantumLink. That alleviated the RUN Script problem for some users. With the passage of more time, other REUs with compatible software, such as Creative Micro Designs RAMLink and RAMDrive became available. That took care of incompatibility issues. We have no plans for publishing any changes to RUN Script to accommodate the discontinued 1750 REU.

**Q** *I use a Super Expander cartridge with my C-64. The cartridge's built-in sprite editor is easy to use, but I can't find a way to save the sprites I create to disk. I have tried transforming the sprite dot patterns into variables and saving them as a sequential file, but that doesn't seem to work, either.*

*I have tried saving sections of memory where I thought the sprite pattern might reside, without success. If there's anything I am doing wrong, please let me know.*

—JOHN WRITT
LEXINGTON, KY

**A** If you have a manual for the Super Expander cartridge, you may want to check in there for additional information on the sprite editor. Unfortunately, I don't have such a manual, so I can't pass along the procedure to you. One of the conveniences of the sprite editors is that they take the drudgery out of having to "reinvent the wheel" whenever someone wants to create and save sprites to disk. Of course, with no documentation on how to use the editor, it's not going to be of much use.

One of the best solutions I know of is to use a sprite editor such as the Ultimate Sprite Editor published in *RUN* (Nov/Dec '91) by Mark Jordan. Sprite Editor is packed with time-saving tools that makes the creation and saving of sprites a breeze. All of the sprites created with it should work fine with the Super Expander cartridge.

**Q** *I have an older C-64 and 1541 disk drive. The drive has a hard time formatting new disks, and it won't work properly if I power up with a disk in the drive. The speed is correct according to an alignment program. Is there anything I can do to fix this problem? Also, my Datasette cassette player will not work with the 1581 disk drive plugged in. Is this normal?*

—BILL WHITE
LOS ANGELES, CA

**A** The problem that you're experiencing with your computer and 1541 drive is more common than you might think. Virtually all Commodore 5¼-inch drives, such as the 1541 and 1571, eventually go out of alignment. When this begins to occur, one of the first things you'll notice is that the drive begins to lose its ability to format disks. A number of factors contribute to the misalignment of floppy drives. Dirty disk surfaces, airborne dust and frequent use all contribute to throwing the drives' heads askew. Even if you go to the extremes of keeping your computer area spotlessly clean, using an air filtration system in your home, and only using new disks in your drives, bear in mind the read/write heads are mechanical devices that are subject to wear and tear from heat and constant motion.

The solution: Align the drive yourself, or have a service center do it for you. Programs are available on the networks, such as QuantumLink, to guide you through the process if you want to tackle it yourself. On Q-Link, look for R/X Aligner v3.0 and Disk R/X V2.3. You'll find them under DOS, Alignment and Cleaning in the C-64 Disk Utilities section of the Commodore Information Network (CIN).

Most service centers only charge about $45 to align a disk drive for you, and it's money well spent, since they're experienced in the procedure and it's something you won't have to do again anytime soon.

Your second question concerning the 1581 and Datasette really doesn't surprise me, but because I don't have access to a Datasette (they've been out of production for over seven years), I can't test and see if I experience the same problems.

I do know, however, that a C-128D cannot access devices plugged into the User port (such as a modem) if a 1581 is connected to the system and it is not turned on. ■

*Do you have problems with your hardware or questions about your software? You can get help by writing to:*

*Commodore Clinic*
*c/o* RUN *Magazine*
*80 Elm St.*
*Peterborough, NH 03458.*

*Due to the volume of mail, questions can be answered only through this column.*

# News and New Products

*Big plans at Creative Micro Designs, an improved version of Big Blue Reader and* RUN *announces the winners of our Summer Fun Giveaway.*

By JANICE CROTTY

### Readers Pick RUN Winners

PETERBOROUGH, NH—More than two thousand readers entered *RUN*'s $2000 Summer Fun Giveaway. On the entry form, we asked you to list your favorite article from each of our summer issues. Your favorites, in order, were "**Geos 101**," "**Shareware**," "**Perfect Print**" and "**Online Solutions**."

### A Better Big Blue

DECATUR, IN—SOGWAP Software has just released **Big Blue Reader 4.0**, a significant upgrade of their popular MS/DOS-to-Commodore conversion utility. BBR has long been a standard in the average Commodore user's software library, and with its lengthy list of new features, BBR is even more powerful. Improvements have been made to both the C-64 and C-128 versions.

For instance, BBR 4.0 can transfer "Screen Code" files, such as Word Writer-64, Speed Script, The Write Stuff and Omni Writer, to MS/DOS format. (Pocket Writer and Paper Clip—PRG Screen Code files—transfer without formatting.) BBR 4.0 can also transfer ASCII or binary files of any length, and can read files from MS/DOS and CMD subdirectories.

Unfortunately, BBR still does not work with the 1541 disk drive, but it does support the 1571, 1581, CMD's new FD 2000 and 4000, and Commodore REUs.

For a complete description of Big Blue Reader 4.0, write SOGWAP at 115 Bellmont Road, Decatur, IN 46733; or call 219-724-3900. The program is $44.95, but current owners can upgrade for $18 if they return their original disks.

### Creative Developments

EAST LONGMEADOW, MA—This fall, Creative Micro Designs leads the market in Commodore and GEOS support with surprising new disk technology and many other enhancements to their impressive line of products.

The newest CMD application is **geoCanvas**, a paint program by Nate Fiedler. For a review of geoCanvas and a photo showing its unique multiwindow capabilities, see Curtain Call on page 48. GeoCanvas is available now for $34.95.

Undoubtedly the hottest items to hit the market this year are the **FD-2000** and the **FD-4000** floppy disk drives. These unbelievable drives let you store up to 3 megabytes of data on a single 3½-inch disk. At press time, CMD expected to start shipping these drives in October, and both will fall within the $250–325 price range. For details, see "Megadrives" on page 14.

Later in the holiday season, look for a disk of Jim Collette's GEOS utility programs. Collette has long been known for his excellent utilities, but now this remarkable young man is off to college, and has arranged to have CMD distribute his software. Collette and CMD are working together to produce **Collette Utilities** ($34.95), a disk that will include geoWizard, Laser Landscape and Font Editor, among others.

GateWay users will be pleased to note that Collette has written an upgrade for CMD's popular deskTop replacement. **GateWay 2.5**, now available, supports geoRAM, adds a few new features and fixes some bugs, including anomalies with the clock. Gateway 2.5 sells for $34.95, but to current owners of gateWay the upgrade is only $15 when you return your original gateWay disk.

(On a side note, Collette began studying computer engineering this fall at Clarkson University in New York. What's his biggest gripe about college so far? The closest Q-Link node is in Syracuse, a long-distance call.)

Also coming from CMD is an enhanced version of Perfect Print, which will include higher resolution HQ printer drivers for 9-pin printers, better support for IBM-emulation printers and LQ border fonts for use in geoWrite documents. At least one additional disk of border fonts is also in the works, and will reportedly be available in December. (Neither price has been announced at press time, though release of the upgrade is imminent.)

For more information, you can call CMD at 413-525-0023. ■

### Who Won RUN's Summer Fun Giveaway?

*Congratulations to these 20 winners chosen from over 2000 entries. Thanks to all of our readers for your overwhelming support.*

| | |
|---|---|
| **Jay Peet** of Ventor, NJ | *40 megabyte CMD Hard Drive* |
| **Robert Wadley** of Atlanta, GA | *2 megabyte RAMDrive* |
| **Jennifer Long** of Lancaster, PA | *1 megabyte RAMLink* |
| **Joseph Stalzer** of Ridgewood, NY | *Complete line of GEOS software* |
| **K.R. Rollins** of Clarkston, MI | *Psygnosis games collection* |
| **Frank Vyhnal** of Irving, TX | *Timeworks productivity package* |
| **Margaret Arbogast** of Sacramento, CA | *JiffyDOS & SID Symphony* |
| **April Christie** of Bartlett, TN | *Abacus productivity package* |
| **Rick Nielsen** of Spencer, IA | RUN *software package* |
| **Thomas Garrigus** of Landsale, PA | *Mixed games pack* |

*The following readers won a single game:* **Steven Cabillot** of Mound, MN • **Reg Freedman** of Staten Island, NY • **Thomas Gulizio** of Brooklyn, NY • **Wayne Kerns** of Justice, IL • **Michael Long** of Rock Hill, SC • **Tara Long** of Miami, FL• **David Moeckly** of Richmond, VA • **Allen Mosley** of Oakland, CA • **Charles Roy** of Plainview, NY • **Merrill Sanders** of Salem, OR

# RUN

## SPECIAL CATALOG SECTION

# *THE* Place for Holiday Shopping!

***Great buys for that computer lover in your family.***

☞ **Commodore REUs now in stock! See page 40.**

## *RUN* SPECIALS ON PRODUCTS FROM CMD

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**Perfect Print for GEOS now available!** Experience 360 × 360 Dots-Per-Inch resolution with most 24-pin printers and 240 × 216 DPI with 9-Pin printers! Supports text, graphics, and attributes such as italics, bold, underlining. Comes complete as a one- or two-package unit, consisting of the Main system, and a second package including printer drivers and 42 fonts!

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For those who crave the convenience of a hard drive, *RUN* offers these hard-drivin' specials:

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*Hardware shipping costs:*
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**RAMDrive**: U.S. $8.50 (UPS), $16 (2nd Day); Canada $18; Foreign $50 (includes 220V universal power supply)
**Hard Disks**: U.S. $15 (UPS), $30 (2nd Day); Canada $45 (Airmail only); Foreign orders, add $120 total to price (includes 220V power supply).

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# PRODUCTIVITY & EDUCATION

## PRODUCTIVITY

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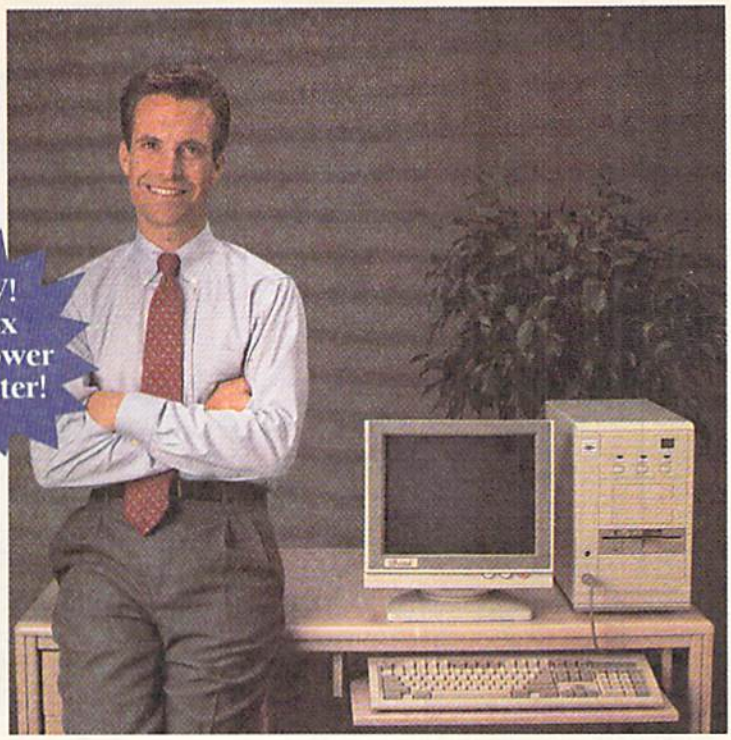

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*From p.23.*

```
                          :REM*132
96Ø IFA$<>CHR$(32)THEN95Ø
                          :REM*127
97Ø IFA$=CHR$(32)THEN11Ø
                          :REM*191
98Ø N$="{SHFT CLR}{6 CRSR DNs}Y
    OU MUST HAVE FOUR NUMBERS W
    ITH A '/'{3 SPACEs}DIVIDING
     THEM."               :REM*118
99Ø M$="{2 SPACEs}SEE LISTED EX
    AMPLE.":PRINTN$;:PRINTM$
                          :REM*52
1ØØØ GOTO94Ø              :REM*57
1Ø1Ø K$="{SHFT CLR}{6 CRSR DNs}
     YOU GOTTA PUT SOMETHING HE
     RE OR WE DON'T GO ANY FURT
     HER."                :REM*12Ø
1Ø2Ø PRINTK$              :REM*146
1Ø3Ø PRINTL$              :REM*166
1Ø4Ø GETA$:IFA$=""THEN1Ø4Ø
                          :REM*66
1Ø5Ø IFA$<>CHR$(32)THEN1Ø4Ø
                          :REM*51
1Ø6Ø IFA$=CHR$(32)THEN2ØØ
                          :REM*228
1Ø7Ø J$="{SHFT CLR}{6 CRSR DNs}
     THERE'S ONLY ROOM FOR 4Ø C
     HARACTERS ON THIS LINE.":P
     RINTJ$               :REM*153
1Ø8Ø H$="{CRSR DN}YOU CAN ABBRE
     VIATE, BUT DON'T USE PERIO
     DS OR COMMAS.":PRINTH$
                          :REM*212
1Ø9Ø GOTO1Ø3Ø              :REM*126
11ØØ E$="{SHFT CLR}{6 CRSR DNs}
     YOU MUST HAVE A DIGITAL AM
     OUNT FOR EACH CHECK.":PRIN
     TE$                  :REM*23Ø
111Ø D$="{CRSR DN}REMEMBER TO A
     DD YOUR DECIMAL POINT{2 SP
     ACEs}AND CENTS. SEE LISTED
     "                    :REM*237
112Ø C$=" EXAMPLE.":PRINTD$;:PR
     INTC$:PRINTL$        :REM*1Ø4
113Ø GETA$:IFA$=""THEN113Ø
                          :REM*229
114Ø IFA$<>CHR$(32)THEN113Ø
                          :REM*92
115Ø GOTO24Ø              :REM*193
116Ø KK$="{SHFT CLR}{6 CRSR DNs
     }YOU NEED TO TYPE OUT THE
     AMOUNT.":PRINTKK$    :REM*12Ø
117Ø HH$="{CRSR DN}SEE LISTED E
     XAMPLE.":PRINTHH$    :REM*239
118Ø PRINTL$              :REM*63
119Ø GETA$:IFA$=""THEN119Ø
                          :REM*118
12ØØ IFA$<>CHR$(32)THEN119Ø
                          :REM*45
121Ø GOTO27Ø              :REM*11
122Ø II$="{SHFT CLR}{6 CRSR DNs
     }THIS ENTRY IS OVER 4Ø CHA
     RACTERS.":PRINTII$   :REM*64
123Ø JJ$="{CRSR DN}YOU NEED TO
     SHORTEN IT.":PRINTJJ$:GOTO
     118Ø                 :REM*178
124Ø PRINTN$;:PRINTM$:PRINTL$
                          :REM*76
125Ø GETA$:IFA$=""THEN125Ø
                          :REM*71
126Ø IFA$<>CHR$(32)THEN125Ø
                          :REM*6Ø
127Ø GOTO56Ø              :REM*76
128Ø PRINTK$              :REM*157
129Ø PRINTL$              :REM*161
13ØØ GETA$:IFA$=""THEN13ØØ
                          :REM*124
131Ø IFA$<>CHR$(32)THEN13ØØ
                          :REM*39
132Ø GOTO59Ø              :REM*129
133Ø PRINTJ$:PRINTH$:GOTO129Ø
                          :REM*52
134Ø PRINTE$:PRINTD$;:PRINTC$:P
     RINTL$               :REM*152
135Ø GETA$:IFA$=""THEN135Ø
                          :REM*244
136Ø IFA$<>CHR$(32)THEN135Ø
                          :REM*175
137Ø GOTO63Ø              :REM*175
138Ø PRINTKK$:PRINTHH$    :REM*42
139Ø PRINTL$              :REM*12
14ØØ GETA$:IFA$=""THEN14ØØ
                          :REM*237
141Ø IFA$<>CHR$(32)THEN14ØØ
                          :REM*86
142Ø GOTO66Ø              :REM*228
143Ø PRINTII$:PRINTJJ$:GOTO139Ø
                          :REM*83
```


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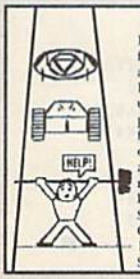


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# RUN's Checksum Program and Typing Hints

By Bob Kodadek and the *RUN* Editorial Staff

CHECKSUM IS A PROGRAM that proofreads your typing when you enter a listing from the magazine. It assigns a numerical value to each character that you type, adds up the values of the line you typed and displays the sum. (Checksum, therefore, means that it *checks* your typing by *summing* the characters.) It also verifies that you have typed the characters in the proper order. (Checksum won't tell you if you miss a line of code entirely, so verify that yourself.)

Checksum runs in the background when you type in lines of programming code. Whenever you type a line and press RETURN, the Checksum will display a value. Compare that value to the value published next to the line of code in the magazine (eg., :REM*123). If the numbers match, you've typed the line correctly. Simple.

### Typing in Checksum and Other Good Advice

First, type in Checksum carefully from Listing 1 below. Be sure to press RETURN after every line to enter it into memory. Once you have typed the program, save it. In fact, save it a few times while you're typing, just to be safe. (This is good advice whenever you type in a program. I usually change the name each time I save; for example, Supergame1, Supergame2, and so on.)

Double check your work, making sure that you've typed in every line, and you've pressed RETURN after every line you've typed. If you make errors when typing in Checksum, a test run of Checksum will tell you which line is incorrect. (This safety feature works only in the Checksum program itself. It does not apply to any other listings in the magazine.) Whenever you find a typing error (in any program listing), fix it, press RETURN to enter the change, *save the program again*, and try another run. Repeat as often as necessary.

Important tip: Don't get discouraged if the program won't run. Be patient. Be thorough. It will work eventually.

You'll know your Checksum is ready when you see the line

```
TO TOGGLE ON OR OFF, SYS{number}
```

### Using Checksum and Even More Good Advice

When you're ready to type in your first listing from the magazine, load and run Checksum. Make a note of the number that is displayed on the screen (49152 for the C-64; 3328 for the C-128). To activate and deactivate Checksum, type SYS followed by that number, then press RETURN. You need to have Checksum active whenever you're typing in a listing. Checksum must be deactivated, however, when you run the new program.

The next step is typing in a new program listing as it appears in the magazine. As you begin, you'll notice that at the end of each line is a colon, followed by the letters REM, an asterisk and a 1–3 digit number, like this:

```
:REM*123
```

Don't type any of this in: It's simply the Checksum value. Stop typing before the colon and press RETURN. If you've typed the line correctly, the number displayed on the screen will match the Checksum value. If the numbers don't match, you've made a mistake. Check the line carefully, make your changes and press RETURN. The computer won't know you've made a change unless you press RETURN to enter it.

A few type-in hints: The Checksum does not verify blank spaces in the program lines unless they are within quotation marks, because adding or omitting such spaces will not affect the operation of the program. The exception to this is hexadecimal Data statements. These are the Data statements, such as this one, that don't have commas:

```
100 DATA 12345678901234567890*12345678901234567890*123
    45678901234567890*
```

In statements such as these, you must have one space between the word DATA and the numbers that follow. Checksum will not catch that error.

One other common mistake is to type in the spaces that fall under the line number. In the example above you should not put a carriage return or spaces between the 3 and the 4 where the line breaks.

### What the Heck Are Curly Braces?

As you type, you will undoubtedly be confused the first time you see curly braces {}. These braces mean "perform the function explained within." For example, {22 SPACES} means that you need to press the space bar 22 times. Don't type the braces. Other common examples are:

{SHIFT CLR}—hold down the SHIFT key and press the CLR-HOME key.
{2 CRSR DNs}—tap the cursor down key twice.
{CTRL 1}—hold the CONTOL key and press the 1 key.
{COMD T}—hold down the COMMODORE key and press the T key.
{5 LB.s}—press the British pound key (£ not #) 5 times.

### Keep Your Chin Up—All You Need Is Patience

Continue typing in your program, saving often and checking each checksum value with the one in the magazine, until you've finished the listing. Phew! So now you're ready to run your program, right? Not quite. First, save it. Second, deactivate Checksum by typing SYS followed by 49152 for the C-64 or 3328 for the C-128.

Now you can run. Don't be discouraged if you still get an error. It happens. There are only two errors that Checksum won't catch (omitting a line and the Data statement spaces). Use Checksum faithfully. Be patient. Be thorough. It will work eventually. R

**Listing 1. RUN's Checksum program.**

```
10 REM RUN'S CHECKSUM 64/128 - BOB KODADEK
20 MO=128:SA=3328:IF PEEK(4096)THEN MO=64:SA=49152
30 I=0:CK=0:CH=0:LN=190
40 FOR K=0 TO 16
50 FOR J=1 TO 10:READ B:IF B>255 THEN GOTO 170
60 CH=CH+B:POKE SA+I,B:I=I+1:NEXT
70 READ LC
80 IF LC<>CH THEN GOTO 170
90 CH=0:LN=LN+10
100 NEXT K
110 POKESA+110,240:POKESA+111,38:POKESA+140,234
120 PRINTCHR$(147)STR$(MO)" RUN CHECKSUM":PRINT
130 PRINT"TO TOGGLE ON OR OFF, SYS"SA:IF MO=128 THEN 1
    60
140 POKESA+13,124:POKESA+15,165:POKESA+25,124:POKESA+2
    6,165
150 POKESA+39,20:POKESA+41,21:POKESA+123,205:POKESA+12
    4,189
160 POKESA+4,INT(SA/256):SYS SA:NEW
170 PRINT"YOU HAVE A DATA ERROR IN LINE ";LN;"!":END
180 REM DO NOT CHANGE THESE DATA STATEMENTS!
190 DATA 120,162,24,160,13,173,4,3,201,24,884
200 DATA 208,4,162,13,160,67,142,4,3,140,903
210 DATA 5,3,88,96,32,13,67,152,72,169,697
220 DATA 0,141,0,255,133,176,133,180,166,22,1206
230 DATA 164,23,134,167,132,168,170,189,0,2,1149
240 DATA 240,58,201,48,144,7,201,58,176,3,1136
250 DATA 232,208,240,189,0,2,240,42,201,32,1386
260 DATA 208,4,164,180,240,31,201,34,208,6,1276
270 DATA 165,180,73,1,133,180,230,176,164,176,1478
280 DATA 165,167,24,125,0,2,133,167,165,168,1116
290 DATA 105,0,133,168,136,208,239,232,208,209,1638
300 DATA 169,42,32,210,255,165,167,69,168,170,1447
310 DATA 169,0,32,50,142,169,32,32,210,255,1091
320 DATA 32,210,255,169,13,32,210,255,104,168,1448
330 DATA 96,104,170,24,32,240,255,104,168,96,1289
340 DATA 56,32,240,255,138,72,152,72,24,162,1203
350 DATA 0,160,0,32,240,255,169,42,208,198,1304
```

# SOFTWARE GALLERY

*Great grades for the holidays: A super-hero game collection, some rip-roarin' Western clip art and a SID sound editor. Also, PD software worth wishing for.*

By JOHN RYAN

## MARVELOUS MARVEL MADNESS ..... A

*Super Fun and Super Value With This Super-Hero Collection*

In the last issue of Software Gallery, I had the somewhat dubious honor of reviewing one of the latest "bargain" game collections; I was not impressed. This issue finds me, again, looking at a repackaged collection of games, but this time I'm pleased to report that the fare offered in Marvelous Marvel Madness is served on a polished platter.

First off, this collection of three arcade/action games should appeal to all comic book fans. As the title implies, Marvel Madness is based on the adventures of Marvel's comic book characters, most notably Spider-Man, Captain America and the X-Men.

The games have a few things in common: All have exquisite graphics, smooth animation and game play, and a high-end, glossy look that smacks of a truly professional product. With that in mind, let's take a brief look at what's in store for you if you should find X-Men in your Christmas stocking.

First, Spider-Man and Captain America star in Doom's Revenge. Dr. Doom has gotten his hands on a nuclear weapon and is threatening to bomb a major American city—unless, of course, Spidey and the Captain can put a stop to his insidious plan. In order to smash dear Dr. Doom, our heroes must fight their collective way into Doom's castle, defeat his minions and face off with the old Doc himself. The game is actually made up of a series of battle sequences, where you (as Spider-Man and Captain America, alternately) fight bad guys with names like Rhino, Machete and Electro.

Doom's Revenge is more like an electronic comic book than the other games in this collection. Before each test of Spider-Man's or Captain America's special skills, the story line is presented on the screen in classic comic book style. Beautifully drawn with rich colors, the computerized comics are darn near as engrossing as the game. Once past each "page" of comics, the picture changes to full-screen action as you actually play out the story line.

**An excellent value and a must-have, Marvel Madness from MicroProse could make you a super hero at your house.**

Next in the super hero hit parade is my favorite of the three games, The Amazing Spider-Man. This mix of action, arcade and strategy will definitely keep you glued to your Commodore screen like a fly in Spidey's web. Mary Jane, the wife of Peter Parker (a.k.a., Spider-Man) has been kidnapped by Mysterio. Spidey's job is, of course, to slip into Mysterio's lair and rescue her.

This game is like Mario Brothers with webs. You'll find obstacles, traps, and monsters galore as you wind your way through level after level of full-screen, high-resolution graphics. You'll have to use all of Spidey's power to get through the labyrinth. You can climb walls (or ceilings!) and fire your webs to get over, around or under the obstacles blocking your way.

Aside from swinging a mean joystick, you'll also have to use your noggin to solve the puzzles associated with each level. Only then will you be allowed to advance. The animation and playability are superb, even though Spidey's on-screen character is a bit small.

X-Men, Madness in Murderworld rounds out this triple-header. Professor Xavier has been kidnapped by his long-time enemy, Magneto (kidnapping seems to be a popular theme). It's up to the mutant X-Men to rescue their mentor.

To advance each level, you'll have to contend with puzzles, traps and hostile creatures. You can select which of the X-Men—Cyclops, Storm, Nightcrawler, Dazzler, Colossus or Wolverine—to use to solve a puzzle or fight your battles. Since each X-Man has special abilities, ranging from fighting prowess to mental abilities, you must choose your heros effectively. There's a lot of fast-action combat here, but X-Men also provides devious traps and difficult puzzles. And, as I said before, the graphics and sound are great; plenty of color and smooth animation make this game pleasing to look at and to play.

The bottom line: Marvelous Marvel Madness is a great value. Its fast, fun and colorful. It has good documentation and reasonable loading times. If I was going to nominate a "must-have" for this software season, Marvel Madness would certainly get the nod. "It's mabelous...just mabelous."

*(C-64/$24.95 MicroProse, 180 Lakefront Drive, Hunt Valley, MD 21030)*

**RUN's Software Report Card**

| | |
|---|---|
| Excellent! | A |
| Very Decent | B |
| Okay | C |
| Not Too Swift | D |
| RUN The Other Way | F |

## WESTERN HERITAGE GRAPHICS COLLECTION ..... B+

*Everything You Need for Western Print Shop Creations*

Something miraculous happened a hundred thousand years ago: A chap named Grog Rockneck came up with an idea to put prehistoric clip art on his cave walls. Unfortunately, Grog found he ►

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To be sure, we've come a long way from the cave-drawing days. In fact, we no longer have to rely on our own artistic skills to have access to literally thousands of pictures or drawings. Clip art collections abound, and the Western Heritage Graphics Collection has found a definite niche in an otherwise crowded market. Western Heritage is a collection of graphics, borders and fonts that you can import and use with your own copy of Print Shop.

As the name implies, Western Heritage's graphics are all based upon an Old West theme. A plethora of nicely drawn graphics await your homemade wanted posters, stationary, letterhead, invitations or newsletters. You'll find cowboys, Indians, horses, famous western heroes and villains, brands, wagons and just about any other figure we popularly ascribe to the Old West.

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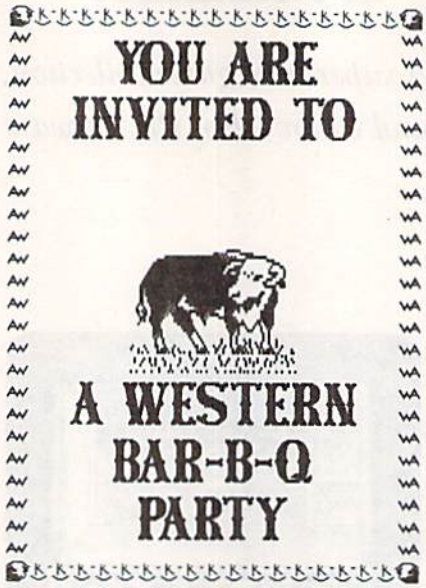



**Western Heritage provides Print Shop graphics, borders and fonts for every Western occasion.**

Moreover, a bevy of western fonts can help get your messages across. The package's 11 fonts include not only those associated with original reward posters, but also old English fonts, stick-and-rope lettering, and even a Native American symbol language. Lastly, Western Heritage offers more than 40 border patterns, including ropes, brands, boots, horses, wagons, tackle, Native American designs and more.

While Western Heritage is very easy to use, it comes with a few caveats: First, you must own Print Shop version 2.0, or version 1.0 with either the Companion or the Holiday Edition, which update Print Shop 1.0 to version 2.0. Second, I used Western Heritage with my Seikosha SP-1000 printer and Super Graphics Interface with no problems. But, the manual states that Western Heritage will not work with a Commodore printer, so before purchasing this program call Horse Feathers and ask them about your particular printer (1-509-376-6928).

If you're tired of using the same old clip art day after day, Western Heritage can add new zing to your Print Shop sessions. The thorough documentation includes samples, instructions for putting together wanted posters and the like, and the graphics look great. If western themes are your thing, Western Heritage has everything you need—indigo dye

# PD GALLERY

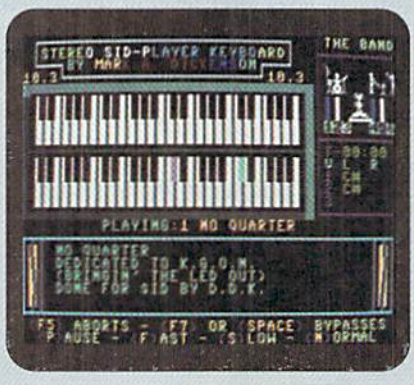
RUN *readers are turning to shareware and public domain software more and more often, and Software Gallery has heard the call. Look for reviews of freely distributable software in every issue.*

## STEREO PLAYER V.10.03.....A

### *A Great Way to Play Music Files on Your C-64*

I only have one question about this program: Why in the world didn't Mark Dickerson release this fine C-64 music player commercially? This is, by far, the best program I've run across—bar none—for playing "SIDed" music files. (For the uninitiated, SIDed music refers to musical scores composed with Compute!'s Music System for the Commodore 64 and 128, Enhanced Editor.) There are thousands of music files that you can download and play with Stereo Player. And I'm not talking about rinky-dink, Mary-had-a-little-lamb compositions. Some of the best music I have ever heard out of the 64's SID chip has come from Dickerson's Stereo Player. I've even heard songs that sound better on my C-64 than on my Amiga.

Everything about Stereo Player is top notch. Its fast, good-looking, easy-to-use interface is divided in half: One side displays the music files on the selected disk, the other displays the commands you can invoke to move around the system. You can select one song or highlight up to 200 songs from a list. Moreover, some SIDed files have pictures or lyrics associated with them that will appear as the song plays. You can repeat songs, change to a different file disk or invoke various DOS commands to help keep your files straight.


STEREO SID-PLAYER KEYBOARD
THE BAND
PLAYING:1 NO QUARTER
NO QUARTER
DEDICATED TO K.G.O.M.
(BRINGIN' THE LED OUT)
SOME FOR SID BY D.C.K.
F5 ABORTS - F7 OR SPACE BYPASSES
F AUSE - F AST - S LOW - N ORMAL

**PD program Stereo Player rivals commercial C-64 music programs.**

Stereo Player has advanced features normally associated with commercial programs, including fast-load routines, 1581 drive support, drive logging, even a simulated piano keyboard that displays the notes being played. Q-Link has the largest collection of SIDed music available, including oldies, Top 40, soundtracks and original compositions.

But this is supposed to be a stereo player, is it not? Quite so, and that's where it shines. How can you get stereo sound from a one-channel system like the 64's? Easy, you must have a second SID chip installed. It's not as difficult as it sounds, especially since Creative Micro Designs sells a Stereo SID Cartridge that plugs into the back of the computer, (See "Curtain Call" in the July/August issue for a review). With a second SID chip, you have two channels and six "voices" available, making it possible to create some really outstanding music and sound effects. Stereo Player sends its music through both the left and right channels for pseudo-stereo playback. Of course, the music file in question must be created specifically for stereo playback. Mono songs are automatically put through one channel.

If you're a music lover and haven't

and cave walls not included, of course.

*(C-64 and Print Shop/$24.95. Horse Feathers Graphics, North 27310 Short Road, Deer Park, Washington 99006-9712)*

## SID Master .....B

### *Sound Editor Program Helps Users Understand the SID Chip*

The C-64, as most of us know, has always been capable of producing sophisticated music and sound effects. Unfortunately, working with the Sound Interface Device (the SID chip) is often an exercise in frustration. Without a good reference book—and they are hard to find these days—programming the SID chip to make anything other than migraine-inducing static can be a hassle. Many sound editor programs have been released over the years in an effort to make programming the SID a little less difficult, and (as you might have guessed) SID Master is yet another.

If you're a devoted follower of the "boot-and-go" school of program use, someone who loathes wading through documentation, you'll be sorely disappointed with SID Master. Even though you can experiment with the program by changing different register values, you won't really know what you're doing unless you happen to be a SID wizard to begin with. This program was designed to help users understand how the SID works. To do that, you're going to have to hit the extensive and often technical documentation.

The 48-page booklet that accompanies this program holds a wealth of information. Not only will it explain how to use the program, but it also shows how waveforms and other SID features work, using both narrative and a liberal sprinkling of diagrams. Make no mistake about it, however, some of the material is rather technical.

Although the program doesn't break new ground, it does succeed in one vital area: SID Master provides both visual and audio cues that help you navigate the SID chip, and develop sophisticated sound effects.

SID Master's single screen is divided up into five windows that address distinct aspects of the SID's sound registers. The screen displays the SID's three voices along with their frequency parameters, waveform, attack, decay, sustain and release values. Ring modulation and sync parameters are also displayed, among other things.

Bringing the voices to life is as easy as pressing a function key. By entering different numbers into voice parameters, you can dramatically change the way the voice sounds. Moreover, you can further shape the sound by working with SID Master's filter registers and special "software links"—registers not actually within the SID chip that affect the quality of the sounds.

The SID Master program offers visual prompts to what's happening inside the computer. Digital and analog meters at the bottom of the screen display the output range of the SID's sound registers. Additionally, a wave graphics area places a graphical designation of the selected waveform on the screen.

SID Master is one of the better SID editors I've chanced across. It is not a music editor, nor will it make you an expert SID programmer. It will, however, make experimenting with sound effects faster and easier.

*(C-64/$7. Indy Software, 9725 Alexander Lane, Fishers, IN 46038)* ■

yet downloaded this program, do so. And, while you're at it, make sure you download the documentation file. Although you don't necessarily need it, you'll want to know all the ins and outs of Stereo Player.

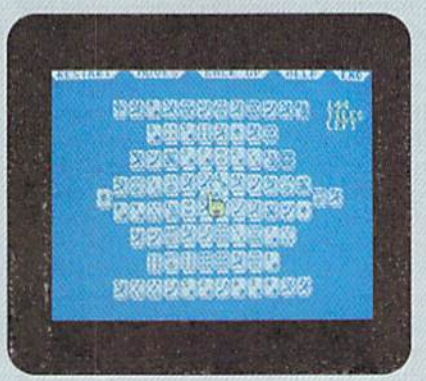
*Author: Mark A. Dickerson*
*Service: Q-Link*
*Filename: stereo10.3a.sda*
*Uploader: mark AD I*
*Terms: Freeware*
*DL Time: 1200bps—7:56 minutes*
*Required: C-64; For documentation, download "stereo10.doc.sda"*

## Mah Jongg v. 2.0.....B+

### *The Most Addictive Game You May Ever Play*

Mah Jongg, developed thousands of years ago in the Far East, is a variation of Chinese solitaire. You systematically remove tiles from a playing board until none remain. The catch is that you can only remove tiles in matching pairs, and even then, only when the tiles both have a left or right side free. To further complicate matters, the 144 tiles are arranged in a stack, called the *Dragon*. Some tiles are buried on the bottom, so you can't remove them until you've cleared much of the board. Clearing the Mah Jongg Dragon takes both strategy and luck, so chances are good you will play many games before you manage to win one.

Kurt Tappe's C-128 version of Mah Jongg is one of the most faithful I've seen, and the implementation of the game itself is where this program shines. Soon after you run the program, a classic Mah Jongg Dragon (stack) appears with the tiles randomly dispersed. Using a joystick or 1351 mouse, you must select two tiles that have matching patterns. If it's a legal match, they'll be removed from the Dragon; if they don't match, you'll be told so. Tappe also included handy Undo and Help features, to get you through the rough spots.



**Use a mouse or a joystick to clear the Dragon in this classic Chinese game.**

While Tappe's Mah Jongg is not as colorful as some versions I've seen, the tiles are well-drawn and easy to identify, and mouse support is a nifty touch. And even though Mah Jongg 2.0 is written in Basic, it is relatively fast and plays smoothly.

Mah Jongg is admittedly one of my favorite computer games, and I find myself coming back to Kurt Tappe's version time and again—even when I shouldn't. In fact, if my editor asks why my reviews were late, I'll simply have to tell her that I couldn't help it, I've been playing Mah Jongg.

Somehow I think she'll understand.

*Author: Kurt Tappe*
*Service: Q-Link*
*Filename: mah-jongg v2.sda*
*Uploader: KurTappe*
*Terms: Freeware*
*DL Time: 1200bps—4:43*
*Required: C-128 in 40-column mode; Joystick or 1351 mouse*

*—JR*

## CURTAIN CALL

***RUN*'s column where worthy products step into the spotlight and take a bow.**

# geoCanvas

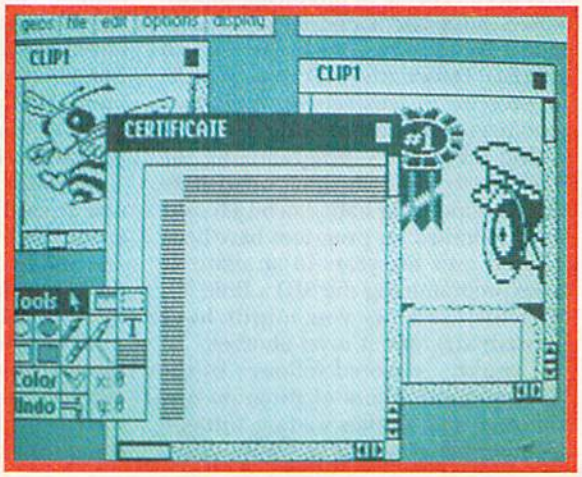
A NEW PAINT program for GEOS? Who needs it? After all, geoPaint is considered to be one of the best high-resolution drawing programs around for the Commodore. If you add on a few power graphics utilities like NewTools and geoStamp, you've got a system that will do it all, right?

Well, maybe not. Nate Fielder's geoCanvas, distributed by CMD for $34.95, and billed as a "professional paint program" for GEOS, packs some impressive features of its own, including plenty of options that geoPaint lacks. And it's compatible with most of those power utilities designed for geoPaint too. So if you're interested in creating great graphics under GEOS, geoCanvas is worth a look.

Check out the way geoCanvas uses windows, for example. No longer are you stuck with geoPaint's arbitrary view on things. In geoCanvas you can open and then resize up to three windows onto your document, each one with slider bars on the sides to change your view. You can cut and paste between these windows too, so you can work in three areas of your page at once. On top of that, these windows can also open another geoCanvas document, which means you can work among several documents simultaneously. And, if you'd like, you can have a window completely fill the screen, which is something even geoPaint 128 can't manage.

The toolbox is movable—another great touch worth noticing. This means you can slide it out of your way while you work. Several new features are included for the familiar tools, such as drawing rays with the polygon tool, leaving tic marks at the end of your ruler, and improved text handling. A menu option will let you place frames around your filled rectagles and circles. The double-click shortcuts so helpful in geoPaint, by which, for example, you can enter pixel-edit mode by double-clicking on the pencil tool, are also available in geoCanvas. Color in geoCanvas is handled pretty much the same way it's handled in geoPaint, with the wonderful addition of an option to change the entire window to selected colors in one fell swoop.

Perusing the drop-down menus will reveal many new features in addition to the frame option mentioned above. For example, you can edit the current brush, which is a good thing since the default brush selection is not as complete as in geoPaint. Another option lets you edit the current pattern (of which there are two more than in geoPaint, by the way). This is also a good thing, since geoCanvas is not compatible with the Ulti-Patt utility and its library of pattern files.




**geoCanvas, written by Nate Fiedler, offers multiple windows and fast slider controls to make working on full-page documents fast and easy.**

Unfortunately, you will also notice that geoCanvas is missing some of geoPaint's standard features, such as a spray paint tool or transparent mode for pasting photo scraps. There are no smoothing or resizing options either, essential features for many kinds of desktop publishing work. Elegant geoPaint details like being able to apply a pattern in "black only," "white only," or "reversed" are also missing. You'll find yourself wishing for the geoPaint method of handling the cursor, where it automatically changes into a tool when it's in a window and reverts to a pointer when it's not. In geoCanvas you're required to manually select a pointer tool. If you forget, which you often will since the cursor looks the same either way, you'll be left wondering why the windows won't respond. On top of that, you're stuck in 40-column mode, even when you're running GEOS 128.

Of course, if you want those geoPaint features, you can always alternate between the two. Each application recognizes and opens documents created with the other, which makes it relatively painless to switch back and forth as you work. It would be even more convenient if geoCanvas was compatible with the Switcher in Gateway or with geoWizard, but it isn't. CMD is working on new versions of those programs, which will be able to coexist more easily, but for now you're stuck with closing completely out of one application and then opening the other.

But don't get me wrong. Take a look at geoCanvas and you're sure to like what you see. It's easy to understand why this application requires an REU of at least 512K to operate. The multiple windows and fast slider controls make working on a full-page document a lot easier. You'll soon get spoiled by the text tool and its improved font selection. You'll also wonder how you ever had the patience to wait for the photo manager to do cutting and pasting between documents when it's so easy to just open a new window.

In fact, you'll pretty much decide that to really have a professional paint system for GEOS you'll need *both* programs. And since if you own GEOS you already own geoPaint, you're half-way there. As long as you want to stay in 40-column mode, geoCanvas will make up the rest.

*—Steve Vander Ark*

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